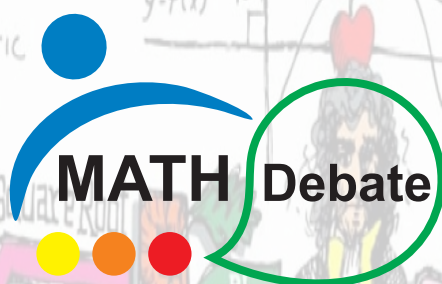


ANALYSIS OF MATH TEACHING METHODOLOGY



**"MATHDebate - The Voice of Students
- Searching Excellence in Math Education
through Increasing the Motivation for Learning"**

**Collection of related good
practices in Europe and beyond**

Ref. number:2016-1-MK01-KA201-021659

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**MATHDebate –
The Voice of Students – Searching Excellence in Math
Education through Increasing the Motivation for
Learning (2016 – 2018)**

Ref. number:2016-1-MK01-KA201-021659

www.mathdebate.eu

**Analysis of math teaching methodology
(Collection of related good practices in Europe and beyond)**

September 2017

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Teachers should be seriously prepared to answer to the requirements of the economy based on knowledge, and the ability to “offer product” with appropriate knowledge, qualifications and competences on the labor market

(T.A.Pachemska, Project Coordinator)

INTRODUCTION

The mathematics is all around us. The ability for understanding mathematics and mathematical judgment is a crucial for the future of the students. In today complex society, learning and understanding mathematics and natural sciences has become necessary for full development of everyone. The development of each country economy depends of the individual simulation, development of new modern technologies and reinforcement of the connections between science disciplines. The importance of mathematics in the recent period is increased because of the huge application of the computers, information technologies, modelling and simulation. Because of that is so important to ensure the best mathematical education for the children already in primary school.

On ICME, 2004 it is discussed about the importance of primary mathematics education that cannot be overemphasized never. It is in the primary years that students from any part of the world learn number concepts and numeration, shapes and figures, and basic measurement skills, among other beginning mathematical skills. Yet, ironically, in the primary grades mathematics learning becomes more problematic than could be expected. Indeed, it is never true that teaching primary school mathematics is without effort.

Generally, the main goal of teaching mathematics is mathematization of students' thinking. The clarity in students' thinking, the simplicity in students' assumptions and deduce logical conclusions are in the basis of the mathematics. One of the most important goals of the mathematics is to develop skill to the students for understanding of the abstract mathematical concepts and solving of the real-life problems.

Besides the huge importance and application of the mathematics in the other sciences, and the application of the mathematical knowledge in everyday life, but in many countries in the world the mathematics is not popular subject between the students. Most students do not like mathematics because they usually do not get the desired results. This usually lead to the anxiety and even phobia for the mathematics. Generally, they face up with conquering the basic mathematical concepts, but also, they could not use the mathematical knowledge in other sciences and in various practical situations. Although mathematics is so important and it is on a pedestal between the sciences, among pupils it is perceived as a difficult, abstract, boring and no practical subject, [1]. These students' attitudes towards mathematics are one of the reasons

for low success of the students on all education levels. Many researchers, as Akinsola, Moenikia and Singh in [2], [3], [4], respectively have shown that the fear of mathematics is a factor for low success in mathematics. Generally, the students' attitudes towards mathematics and their success in mathematics are in positive correlation. A contribution in the study of attitudes toward mathematics was by Neale, who underlined that, "attitude plays a crucial role in learning mathematics and positive attitude toward mathematics is thought to play a key role in causing students to learn mathematics" [5]. Neale in [5] defined mathematical attitude as "a liking or disliking of mathematics, a tendency to engage in or avoid mathematical activity, a belief that one is good or bad at mathematics, and a belief that mathematics is useful or useless". Tait-McCutcheon in [9] has observed that the concept of attitude includes at least three verbs: to think, to feel, and to behave. Thus, students' attitudes toward mathematics affect how well or how often they do it, and how much enjoyment they derive from it, Moenikia [8]. All teachers, especially teachers of math, have struggled to create authentic student interest in the concepts learned in class. Students often go through the motions of the class period because they are required to do so without any genuine interest. This must be changed by considering adding any of these four suggestions into the classroom: taking problems from their real lives, using a creative approach, use pop culture, or by making math music videos. Awarding of the students' attitudes towards mathematics would be useful for the teachers. At the beginning of each semester, attitude test could be applied to the students, so that teachers can identify the students who have negative attitude toward mathematics and can take required precautions. In order to make student active, to increase their motivation, and attitudes, mathematics should be associated with everyday life. Using concrete materials in learning environments positively increases students' mathematics achievement and their attitudes towards mathematics. When students are satisfied with the activities in the learning environment, learning would be more permanent and meaningful. Therefore, this situation is important for students to have positive attitude. The improvement in attitudes is likely to be more significant when taking into consideration different environments, but the main contribution is determined in the class environment. Gillet, Filak have researched on this topic and have shown that teacher support regarding autonomy affected student motivation, among other aspects, in [6, 7]. To overcome these phenomena, it is necessary, to develop new methods by the teachers, activities in which the students will be active in the realization of the teaching process. The classical approach in the teaching, creates a passive student, so the students must be encouraged to take a part in analysis of the mathematical curriculum.

The process of teaching mathematics should be realized in situations which provide:

The students are learning to enjoy in mathematics – the school is the best place to achieve that.

The students are learning the mathematics' importance – the equalizing of the mathematics with formulas and schemas is the worst thing, which can be given to the student. Such approach by the teacher can damage the students' thinking and understanding. The learning where and how some mathematical technique could be used is more important than the studying of that technique, which could be easy, read in the book.

The students are learning to set and to solve the problems – they are studying to talk, to communicate and to work together in the process of solving mathematical problems. Learning that mathematics is an indispensable part of their lives is the best mathematical education.

The students are learning abstraction in order to acquire the relations and structures - they are using the abstraction to acquire some relations, to see the structures of something, to determine the authenticity of some statement. The logical thinking is the best gift, which could be obtained with the mathematics and to use in everyday communication.

The students are learning the basic concepts in mathematics – arithmetic, algebra, geometry, all of them offer conquering of the abstraction, the structure and the generalization.

The students are included in the process of teaching mathematics everyday – the task of every teacher is to activate not only the talented, but and the other students.

By the NCTM, *“Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well.”*

Students learn mathematics through the experiences that teachers provide.

Teachers must know and understand deeply the mathematics they are teaching.

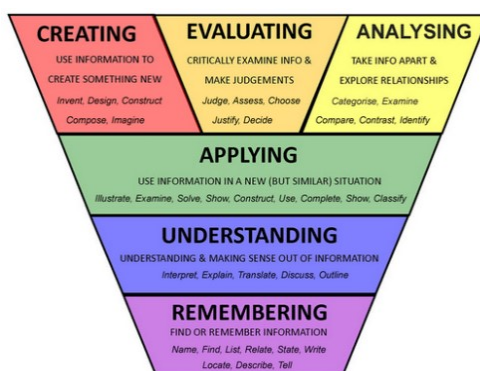
There is no one "right way" to teach.

Effective teaching requires deciding what aspects of a task to highlight, how to organize and orchestrate the work of students.

Effective teaching requires continuing efforts to learn and improve. Teachers need to increase their knowledge about mathematics and pedagogy.

"One of the teaching approaches which contribute particularly well to successful learning in mathematics is - well planned opportunities for children and young people to learn through investigate, active approaches" Learning Together: Mathematics - HMIE.

In the last period are realized many projects in which the main area of the research is the mathematical education. These projects were realized in order to enhance the process of teaching mathematics. In some of them, it is worked for changing of the students' attitudes towards mathematics as a school subject. Also in many projects are elaborated many procedures for solving of some mathematical problems. The methods, which could be used in the process of teaching mathematics, are also elaborated in some projects. There are many realized projects in order to increase the mathematical knowledge through solving mathematical problems. The Erasmus+ project: Math – Labyrinth – Increasing the level of knowledge thought solving mathematical problems is such project. However, **in neither one it is not considered the possibility for active including of the students in the process of teaching mathematics** in a way where the student will choose the method on which the teacher could present some mathematical content. **The active participation of the students in the process of teaching mathematics, in terms of choosing the method for working on some lesson in mathematics, would contribute a different attitude of students towards mathematics as a school subject. On the one hand, positive attitudes and interest in learning mathematics will be imposed, and on the other hand, their knowledge of mathematics as well as their ability to use the acquired mathematical knowledge will be increased**



Available on: <https://education.gov.scot/improvement/Pages/num2higherordermaths.aspx>

Download: 06.09.2017

In order to make the teaching of mathematics accessible to all student and at the same time pleasant, **the project MATHDebate - The Voice of Students – Searching Excellence in Math Education through Increasing the Motivation for Learning (2016 – 2018)** is realizing. In the project pupils, teachers from schools and academic staff take part, and **its main aim is to develop a new method for realization of teaching mathematics, which would increase the students' motivation for learning mathematics, but also would change their attitudes for the importance of the mathematics in the school and their lives.**

What is teaching method?

A teaching method is a way in which a teacher organizes and manages the teaching-learning situation, presents clear explanations and vivid descriptions, assigns and checks if learning interacts effectively with learners through questions and probes, answers and reactions, and praise and criticism (Schulman, 1999). According to Carl (1995), a teaching method is a way of facilitating interaction between the teacher and learners in order to realize set goals. Learning that is motivating therefore should be:

- An active process in which the learner is maximally involved;
- Guided through the use of a variety of teaching methods, which in the end offer learners a variety of learning experiences, that will enable them later to generalize and discriminate information (Carl, 1995).

In order to motivate learners Scot (1994) posited that learner- centered teaching methods should be used to ensure that:

- There is a close link between the learning needs of the learner and the teacher's teaching;
- Feedback is given in phases so that the learner feels that his/her hard work is being recognized and rewarded by the teacher;
- All learners are challenged and extended in their learning; and
- Whatever is being taught is directly linked to the learners' real life experiences.

According to these, we want to develop the new teaching methodology and use it to the students aged 11-15 to like Mathematics and learn more. **Using debate on mathematical problems and ICT methodology for learning will lead to enlarge students' skills of mathematics and their abilities to solve practical and word problems. Students will be an active part of educational process using this new methodology. Students gained knowledge and skills in mathematics can be applied in other areas of science. Thought MATHDebate method also literacy and communication skills are developed.**

A project of this kind is an excellent opportunity for making arguments between minds, criticizing different opinions on some topic, all of it with one goal: achieving very good mathematical skills of the students. At the end, we expect bigger motivation for learning mathematics to be achieved and this will lead to excellence in mathematical education.

This project would be very beneficial for the schools, as it would help the teachers, in attempt to produce motivated and responsible learners, who relate positively to each other, to staff and to the surrounding community. By making mathematical learning more attractive and accessible, we make sure that the students are well-prepared for the exams they will take, which are essential for their future development. In addition, it would help young students to develop self-confidence and to successfully deal with significant life changes and challenges. Nonetheless, it would enable them to make a positive contribution to the society, by developing the expertise and experience needed to claim their rights and to understand their responsibilities, and by preparing them for the challenges and opportunities of working life.

Improving students' motivation to learn mathematics is crucial for many distinct reasons. At the EU level, the Education and Training 2020 strategy underlines the importance of providing efficient and equitable education of high quality in order to improve employability and allow Europe to retain a strong global position. In order to achieve this objective, continued attention must be paid to raising the level of basic skills such as literacy and numeracy (Council of the European Union, 2009).

In the last ten years all the schools in many countries (Macedonia FYR too) face with great difficulties to make students to like and learn mathematics. Although it is an essential subject for future career development of the students it is usually thought than mathematics is very difficult, not interested and not connected with other subject area. The knowledge of the students is decreasing every year. This can be seen by PISA and TIMSS studies conducted in many schools.

When the students are in position to select their high school (after ninth grade), because of the fear of studying Mathematics they usually choose their vocation without any Mathematics in it, like low school, language schools, medical schools, arts, etc. The technical and science study programs at Universities are not popular and have lack of students. For example, there is none unemployed math teacher in a state with very big percent of unemployment.

The state Ministry of education in Macedonia FYR made this question as a national priority and they made reforms to increase the level of Mathematics knowledge. Reducing the share of low-achieving students in mathematics is a priority in every European country, defined as one of the benchmarks for 2020. It also corresponds with one of the four strategic objectives for the European Council's framework: "Improving the quality and efficiency of education and training; acquiring key competences and making the level of education and training more attractive and efficient "(C119 of 28.5.2009)

In efforts that the Ministry of education made to solve this problem, in 2016 Mathematics was introduced as an obligatory subject for graduate students on the state matura examinations. However, the students did not fulfill this because of strong negative debate.

This motivated us to make research about new methodology and create innovative ways of teaching and learning Mathematics using modern technologies, and this also satisfies the European priority to "support the professional development of teachers as mediators of creativity and innovation; promote the incorporation of creativity and innovation at all levels of education and training" (C 141 of 7.6.2008)

We want the teachers together with the Universities professors and volunteers in associations that work on this topic to share their experiences and thoughts and develop new methodology for learning math skills through democratic process of choosing teaching methodology. Using this method, they will learn more, they will be more motivated, they will use innovative technologies to study, and big percent of the students will like to continue with their education in the field of science and technology area. This is an approach focused on student-centered and problem-based active learning, and fostering critical thinking skills.

The focus will be students aged 11-15, i.e. in the last three years of the elementary schools.

We believe that the implementation of the project will increase the underachievement in the basic skills of mathematics, science and literacy through this new effective and innovative teaching method and make excellence in mathematics education.

This project will be able to make a comparison with the topics, matter, and types of problems that students in different countries have and share the experience and knowledge with Math teachers from the selected countries. The societies that are involved in the project will give an insight into the practice of teaching and learning Mathematics in other countries and at the same time, they can contribute to the realization of this project with the enormous experience they have in European projects of this kind.

Neediness for collecting of good practices in Europe and beyond

The analysis of teaching methodology in the MATHDebate Project consists of activities that produce the first output of the MATHDebate Project - Collection of related good practices in Europe and beyond.

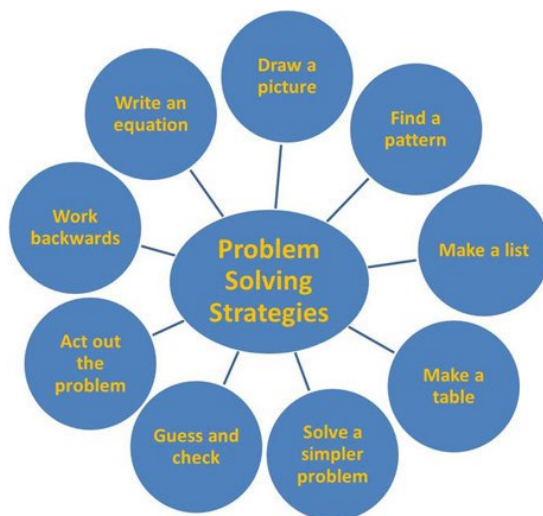
This collection of good practices is simply intended to serve as a base for math educators to share practices and methods that have produced positive results of one sort or another. It is a collection of materials that represent practitioners' perspectives based in part upon research, but mostly upon experience.

What is a description of good practice?

There has to be an expectation of what a pupil might be assumed to "know" when teaching a topic. The aim of the teachers is to build on and advance that knowledge, to ensure that it has been incorporated into the pupils' mental structures appropriately, including knowing about the limitations of use of that knowledge and providing opportunities for pupils to use and apply that knowledge in a variety of contexts.

From a constructivist position it would appear that "good practice" is in providing almost any situation, activity, game, web page activity whereby by some magic process pupils automatically develop the concepts they need. These processes need to be more carefully identified and carefully designed series of activities or even actual "tutoring/teaching/chalk and talk" where by the learner is helped to properly develop the cognitive structures. The good practice should

enable the student for easier solving of practical problems. The teacher should be a guide to the students and should prepare them for successful individual persons. So, he should teach them all the steps which could be applied as strategies in the process of problems' solving.



In order for a practice to be good, it should be taken the following into consideration:

- Good practice should include aspects of both teaching and learning.

Good **learning** takes place when students are given opportunities to solve problems by developing their understanding and making links between different areas of mathematics and applying skills.

Good **teaching** enables good learning to take place by treating students as thinking individuals who can operate mathematically. It involves creating an appropriate environment in which students can respond to high levels of expectation and challenge. They are kept on the edge of thinking. By 1989 National Curriculum Non-Statutory guidance: "The teachers' job is to organise and provide the sorts of experiences which enable pupils to construct and develop their own understanding of mathematics, rather than simply communicate the ways in which they themselves understand the subject."

- Different good practices in various places in the world.

One and the same practice can be differently accepted by the students in different parts of the world. If one practice is good for students who study in a school in Europe, it does not necessarily mean that the same practice would be the best choice for students who study in schools in America. Whether a practice is good or not primarily depends on many factors: the way of realization of the teaching process, previously acquired knowledge, in what social environment students learn etc.

- Good practice needs to be developed in all school's levels.
- Models of good practices need to be shared.
- Good practice needs to be valued at all levels- school, community, district, state, national and international.

The best practice involves:

- listening to the voices of student
- designing a student-centered curriculum
- Student enjoying learning
- doing to understand – active learning
- relating learning to the world of the student
- teachers as learners
- providing professional development
- Including practical examples

One of the goals of this analysis is to gather good practices of various teaching methods and their implementation in the schools:

- to make a survey of math teaching methodology and other activities involving math
- to specify the modern technologies and the methodologies in use
- to collect best practices in schools which participate in the project.

Based on the received information and experiences a list of good practices is provided. This list is a part of the analysis report, which will be published electronically. Some of the collected methods will be uploaded on the e-platform (computer and mobile version) and will be a part of MATHDebate process. In this way, they will be visible for all interested parties – teachers, students, parents...

In the realization of the analysis of good practices participated all partner organizations from the MATHDebate project:

1. Goce Delcev State University - Stip, Macedonia.
2. Union of researchers of Macedonia – SIM – Skopje, Macedonia
3. Municipal Primary school "Ljuben Lape" - Skopje
4. General Secondary School "St. Kliment Ohridski" – Aksakovo, Bulgaria

5. South-West University "Neofit Rilski" – Blagoevgrad, Bulgaria
6. Secondary School "Mihai Eminescu" – Alba Iulia, Romania
7. Cyprus Mathematical Society – Cyprus

All partners have made effort and they spend much of their time to do the research and to make selection of good practices. The school partners have used their current experiences in the classes with their students and also have used the internet resources to collect more examples of good practices. The other partners institutions like involved Universities and associations analyzed the offered good practices from the schools, added good practices from their experiences and researches and after that analyzed all of them and systematized the findings regarding the current teaching methodology in seven groups.

It was considered various methods which are good practices in Europe and beyond.

The collection of these practices is the first step to quality assurance for creation of a methodology of standards, which is used as a base for the development of the interactive e-platform and MATHDebate method.

This collection of good practices is an electronic database of all practices in teaching and learning mathematics that are relevant to the students' age and interest.

The researchers focused their attention according to the type of practice that is relevant to our proposal and rational; since the target group is mostly students at age 11-15 it was of immense importance to concentrate on the activities that are relevant to type and scope for this age of pupils.

What is actually made?

In the period of preparation of the analysis of the teaching methodology, it was taken many activities to achieve the desired outcomes. During the period of the realization of this analysis, the participants carried out the following activities:

- research of good practices (methods) in Europe and beyond;
- creation of methodology of standards;
- selection of methods that are relevant to project proposal;
- collection of good practices;
- creation of database;

- classification of the selected methods in seven groups, according to that in what kind of mathematical content could be applied;

All the methods and approaches included in the Collection of good practices are set out in the MATHDebate project itself and are relevant to the purpose and complexity of the issues of the MATHDebate project.

All the participants in preparation of this analysis made decisions about who to be surveyed, how the data to be collected, the sources of data that to be used, and the duration of data collection during the Meeting 1.

The researchers focused their attention according to the type of practice that is relevant to the target group: students at age 11-15 years.

All good practices as methods are classified in seven groups:

- **Arithmetic**
- **Communication skills**
- **Integrated classroom**
- **Math and data analysis**
- **Real life problems**
- **Specific case studying**
- **Visualization and ICT**

The classification of the methods is done according to the methods' content, the possibilities for their implementation at the classes (in what kind of classes they could be used), the activities/actions that the practice involve and according to the resources which is needed for method application in the teaching process.

The first group **Arithmetic** is referring to all methods which could be applied in order the students adopt and solve problems that include basic arithmetic operations: addition, subtraction, multiplication and division, and more advanced operations, such as manipulations of percentages, square roots, exponentiation, and logarithmic functions. These methods could be applied in realization of algebra and arithmetic classes, when the students do algebraic operations and work with numbers.



Available on:

<https://www.theguardian.com/teacher-network/teacher-blog/2014/may/19/how-to-teach-mental-arithmetic-maths>

(Download on: 06.09.2017)



Mathematics provides a specific and rich context for students to develop their ability to read, write, visualise and talk about complex situations involving a range of mathematical ideas. Students can apply and further develop their literacy skills and strategies by shifting between verbal, graphic, numerical and symbolic forms of representing problems in order to formulate, understand and solve problems and communicate results.

The picture is taken on math class in Primary school Ljuben Lape in Skopje.

(Debate)

The methods included in the second group **Communication skills** refer to students' communication skills. Their main aim is to increase communication in math classes in order to simplify the mathematical problems and to get solution of the problem. These skills, including reading, writing, listening, and speaking, enhance mathematical understanding and problem-solving ability. Moreover, to communicate effectively, one must be able to interpret and analyze mathematical ideas. The curriculum and evaluation standards recommend that opportunities be afforded students to "use language to communicate their mathematical ideas" (NCTM 1989, 78).

Because of the great possibility for application of the mathematical knowledge in the other sciences, it is needed to create a group of methods **Integrated classroom**. Integration focuses on making connections for students, allowing them to engage in relevant, meaningful activities that can be connected to real life. The methods in this category covers mathematical problems from the other sciences. Mathematical problems in biology, geography, physics, and economy could be treat by these methods.



The picture is taken on math class in Primary school Ljuben Lape in Skopje.



The picture is taken on math class in Secondary School "Mihai Eminescu" – Alba Iulia, Romania (Gallery walk)

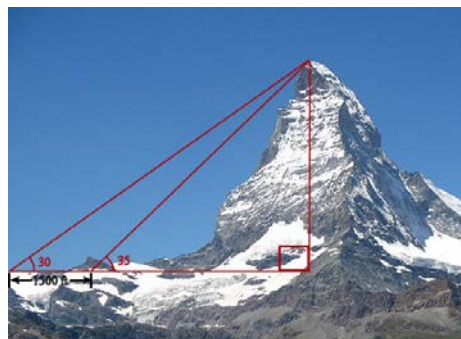
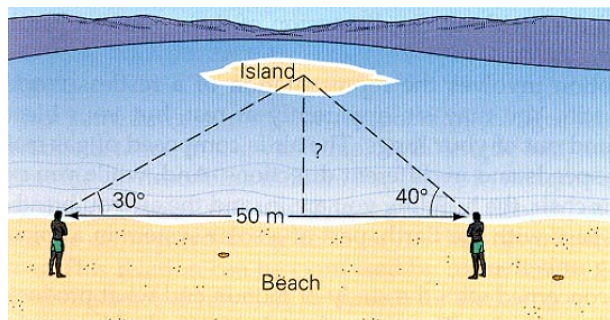
In this category **Math and data analysis**, methods for data analysis are included. The methods in this group could be applied for quantitative or qualitative analysis. Each method has specific technique. These methods could be adequate for work with statistical data and for solving of everyday problems, which were researched by the students.



Available on: <https://www.pinterest.com/explore/student-data-tracking/>

Download: 06.09.2017

Informal "real life" mathematical problems are questions related to a concrete setting. They are used in mathematics education to teach students to connect real life situations to the abstract language of mathematics. This group **Real – life problems** consists of methods for solving practical problems from day-to-day. These problems are covering wide range of practical problems in different areas, with which the people are facing in their lives.



Available on: <http://malini-math.blogspot.mk/2011/08/applications-of-trigonometry-in-real.html>

(download on: 06.09.2017)

Through the years, teachers have struggled to make math meaningful by providing students with problems and examples demonstrating its applications in everyday life. Nowadays technology makes it possible for students to experience the value of math in daily life instead of just reading about it. Case studies drawn from real life give meaning to theoretical concepts. The group of methods for **Specific case studying** consists of methods for researching (qualitative study/inductive research).

The case study method often involves simply observing what happens to, or reconstructing 'the case history' of a single participant or group of individuals. A case study is a report of descriptive information on data of research of an experiment, project, event or analysis.

Mathematical visualization is an aspect of geometry that allows one to understand and explore mathematical phenomena via visualization. Mathematical visualization is used throughout mathematics, particularly in the fields of geometry and analysis. The application of ICT helps the visualization and problems' solving. These methods in the group **Visualization and ICT** could be used for solving problems where visualization is necessary and in that way the process of finding solution is simpler.



The picture is taken on math class in Secondary School "Mihai Eminescu" – Alba Iulia, Romania

(Project)



The picture is taken on math class in Primary school Ljuben Lape in Skopje.

Analysis

What we have concluded about situation of the process of teaching mathematics in the target schools which are part of the project?

It is deduced that in order of increasing of the motivation for learning mathematics it is needed to change the approach in the process of teaching mathematics. The schools which are the target are using different approaches based on the survey between the students and teachers and it is perceived that are needed innovative approaches, especially in the part of learning of mathematical tools in process of solving problems through curriculum.

It was determined at many tests on the level of the Republic of Macedonia, that the students have problems in functional connecting of the knowledge in mathematics and other sciences.

Having in mind, the basic syntagma on the project “To hear the voice of the students”, the teachers and other participants in the project partner institutions have make effort to research the different approaches in the process of teaching mathematics in the countries which have the best results on the international tests.

The analysis of the offered practices has as a goal to help to the teachers in changing the environment for studying and learning, and to allow of the students to be a creator and partners in the teaching process.

It is expected that this interaction between teachers and students, the ICT and other digital technology and resources will increase the motivation for learning mathematics and will contribute the increasing of knowledge. The teachers should use the information technology to increase the number of innovative methods in the teaching process.

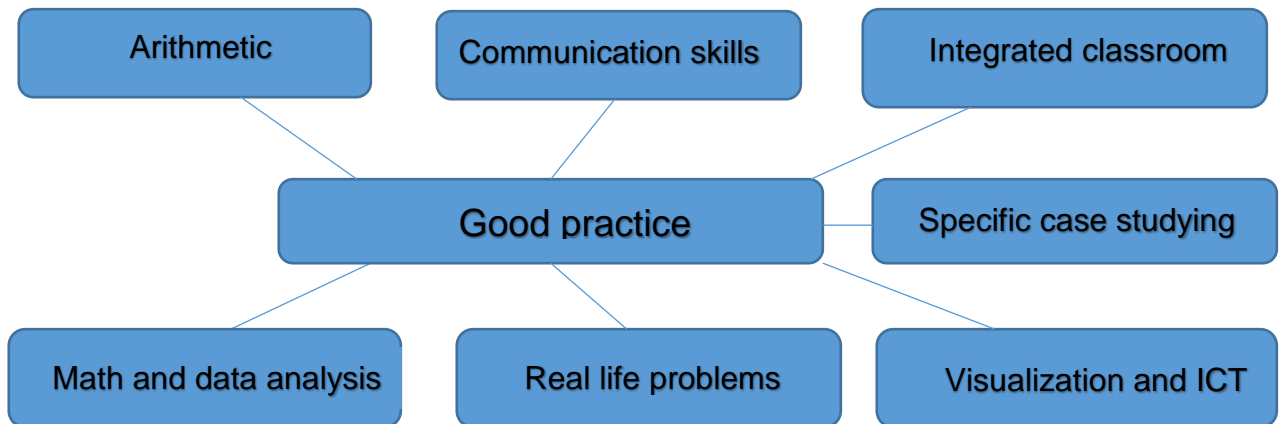
For some of the teaching methods which are part of this analysis, the targeted schools have not enough teaching mechanism and devices. Because of that, it will be used videos and simulations which are already made, in order some method to be simulated.

Why did we need an analysis?

The aim of this publication is not only to present and depict active methods, but also to confirm that they encourage contemporary students to work in class, acquire knowledge and skills that are necessary in life. Moreover, the analysis should encourage the teachers to include new and innovative approaches in the process of teaching mathematics and to foster the students to take an active part in the realization of the teaching process, according to the main motto of the project – Students tell their opinion about the methods and they choose the method which is the best for presenting of some teaching unit by the teacher.

Content of Collection of good practices

The Collection of good practices will be categorized in seven groups, according to that in what kind of mathematical content they could be applied.



Remark: Some of the methods are included in more than one group. It means that they could be applied in different situations and areas in mathematics.

Arithmetic

1. “Find the missing term”-sequences introduced in early age
2. “Make your own money”-practicing simple mathematical operations
3. Comparing Decimals Game
4. Math class assisted by parents
5. Discovering learning
6. Game and simulation
7. Algorithmic method
8. Didactic games in mathematics
9. Individual work in mathematics lesson

Communication skills

1. Explicit instruction or Direct Instruction Lesson
2. Cooperative Learning
3. “Famous mathematicians”- throw - out history of mathematics
4. Peer Tutoring
5. Project
6. The Pyramid (snowball method)
7. The mosaic method
8. The Cluster method
9. Brainstorming
10. The gallery walk
11. Flipped Classroom
12. Measuring angels with jigsaw method
13. Jigsaw puzzles
14. Students Teams Achievement Division – STAD method
15. Storytelling method
16. Think-pair-share (TPS)
17. Debate
18. Discussion method in mathematics
19. The Racing games feast of mathematics
20. Research approach to mathematics presented through presentations by students.
21. Method of Math Work Stations
22. Creative drama – drama +math=dramath

Integrated classroom

1. “Magic Maths” – innovative strategies for developing and embedding mathematics in family learning.
2. “Famous mathematicians” – throw - out history of mathematics
3. Project
4. Brainstorming
5. Discovery Learning – inquiry Method
6. Experimental method in mathematics
7. Geometry and Bulgarian folklore
8. Geometry and fashion design
9. Method of Math Work Stations

Math and data analysis

1. Game and simulation
2. Survey project
3. Data Simulations
4. Debate
5. Didactic games in mathematics

Real life problems

1. “Magic Maths” – innovative strategies for developing and embedding mathematics in family learning.
2. “Make your own money” - practicing simple mathematical operations
3. Math class assisted by parents
4. Problem Solving
5. Discovery Learning – inquiry Method
6. Game and simulation

7. Math-Lab Approach
8. Algorithmic method
9. Motivational tasks / entertaining tasks and games /
10. Motivational Problems in Mathematical Education
11. Maths problems with practical application

Specific case studying

1. The Portfolio
2. INSERT (Interactive Noting System for Effective Reading and Thinking) method
3. Flipped Classroom
4. Students Teams Achievement Division – STAD method
5. Debate
6. The Racing games feast of mathematics
7. Motivational tasks / entertaining tasks and games
8. Motivational Problems in Mathematical Education
9. Mathematics - a tool for modern thinking /"Creative" classroom/
10. Creative drama – drama +math=dramath

Visualization and ICT

1. Where you can, use computers to do the drudge work
2. Brainteasers season
3. Solving mathematical problems using concrete materials
4. 'Part of a whole'- introducing fractions in early age
5. Computer-assisted learning
6. The mosaic method

7. The cube method
8. The gallery walk
9. Game and simulation
10. Math-lab approach
11. Visuals and graphics
12. Coordinate Geometry Method in Solving Problems
13. E-lesson in mathematics as a form of training
14. Experimental method in mathematics
15. Geometry and Bulgarian folklore
16. Geometry and fashion design
17. Method of Math Work Stations
18. Modeling

Remark: The method that is included in few categories will be presented only one time with the good practice template in the annex.

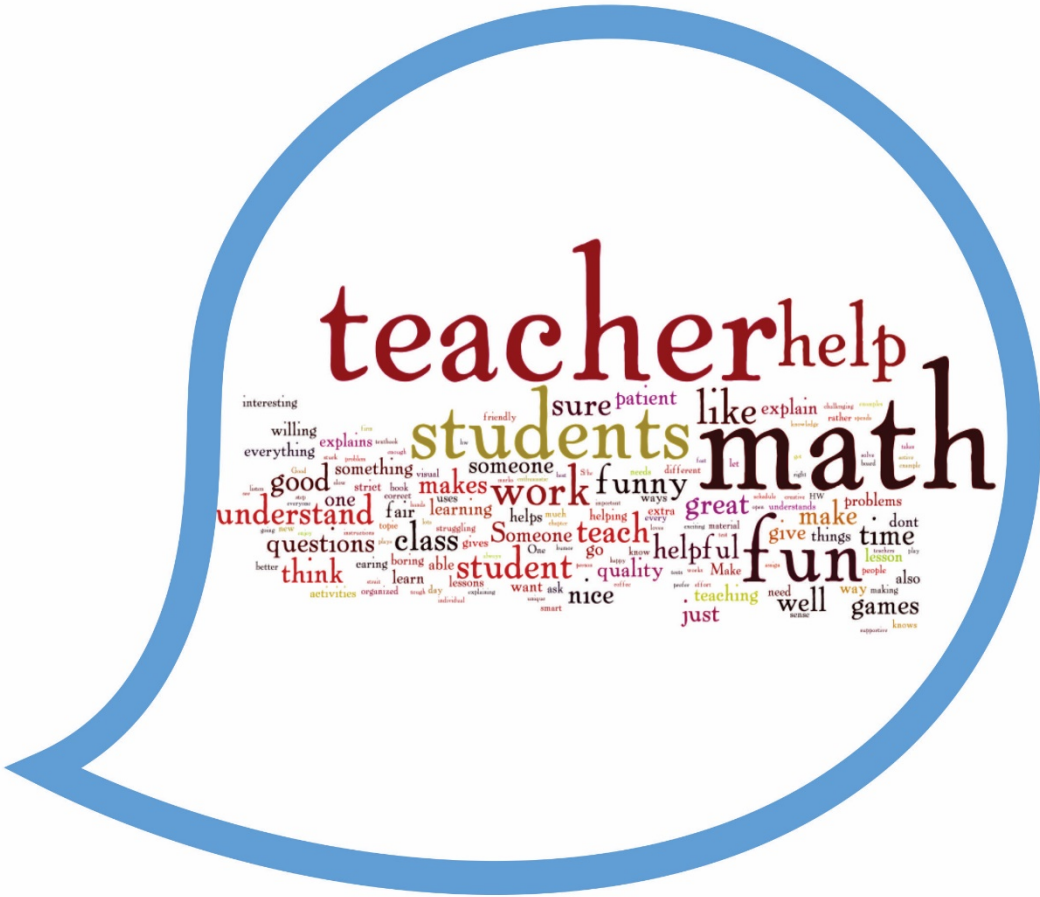
Conclusion

The Analysis of teaching methodology is a first step of the process of developing a new methodology and creating innovative ways of teaching and learning Mathematics using modern technologies. This approach satisfies the European priority to "support the professional development of teachers as mediators of creativity and innovation; promote the incorporation of creativity and innovation at all levels of education and training".

The done analysis of good practices would help to the teachers to change the conditions in the classroom, the approach in teaching of the material from the curriculum. This analysis would be beneficial for the students too, because by using of these good practices the students would be able to choose the way on which their teachers will teach some lesson. The using of ICT in the teaching process would be helpful for the teachers and the students for the increasing of the digital competences in the process of successful development for the persons – carrier of the economy in 21st century. The e-platform, which included the done analysis of good practices, will be available for all who want to try and use this new tool to increase the motivation for studying mathematics. In addition, will be listed the chosen teaching methods which are used in different countries in Europe and beyond. For all teaching methods, the main information, which were needed for the project, are included.

Better competence of the teachers since they will look on the teaching process from the point view of the students and have better understanding for it, strengthening the teachers' digital and linguistic competences, the possibility of networking and exchange of good practices, competitiveness among teachers, comparability of the common European educational space, are our main priorities.

PART 1: ARITHMETIC



MATH Debate

ARITHMETIC

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	"Find missing term"- sequences introduced in early age the
2. COUNTRY	In which country does the good practice take place?	Macedonia
3. LINK	Please give a web link for further information about the good practice.	http://www.stepbystep.org.mk/WEBprostor/toolbox/Matematika_niz_igra.pdf
4. LANGUAGE	Language of the source.	Macedonian
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	The activity is practiced in groups. The students get cards with numbers that they are supposed to find the place for on a big poster posted in the classroom.
6. RESOURCES	Required resources for effective application of the method.	Big poster, cards with numbers, clips
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Visualisation of the order of numbers in sequences • Working in groups • Practicing addition and subtraction
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	The teacher or instructor splits the students in groups of 2-3 students. Each group of students gets a certain set of cards with numbers written on it. On a display, there is a big poster with parts of sequences (at early age, arithmetic) in which there is a number missing. There are more cards then numbers missing on the poster. The task of every group is to check if their numbers fit in some place on the poster. If they have a card that does not fit anywhere, they need to explain why it does not. The game begins when there are no more cards left.
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos to the actual students work.
10. RESULTS	Max 75-100 words. <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the 	This practice is a fun and visual way of introducing sequences, order and relation between numbers for early age. The students also have bounding and befriending time, as

	<ul style="list-style-type: none"> teaching goals. What is the users/target group's opinion of the activity? 	they work in groups. Students like this activity, especially if they are not math-oriented, because nobody is under pressure or in the centre of attention.
11. ASSESSMENT	Suggested assessment method for the students	As it is a group activity, students should be assessed in two different ways: group participation and group achievements. The achievements of the group can be measured by counting how many numbers were putted in the right place. The group participation of a student should be measured by the students in the group, verbally, by asking them to explain who did what and how. By practicing this we also review the material and encourage student to work together.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://drive.google.com/open?id=0B97-RYVZgbqDeEZmWnMyQWFvX3M https://drive.google.com/open?id=0B97-RYVZgbqDUTQyUEZRb1pNenM

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	"Make your own money"-practicing simple mathematical operations
2. COUNTRY	In which country does the good practice take place?	Macedonia
3. LINK	Please give a web link for further information about the good practice.	http://www.stepbystep.org.mk/WEBprostor/toolbox/Matematika_niz_igra.pdf
4. LANGUAGE	Language of the source.	Macedonian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	Student should draw their own money and then later use them to buy things from an improvised market in the classroom.
6. RESOURCES	Required resources for effective application of the method.	Coloured paper, markers, scissors, improvised fruit and vegetables.
7. WHY IT IS A	Give at least three	<ul style="list-style-type: none"> Learning practical skill

GOOD PRACTICE?	characteristics, which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Creativity • Practicing addition, multiplication, subtraction • Working with data
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	Each student receives 5 rectangles out of 4 different colors. They are supposed to first decorate their 'money'. The colors should represent 1 denar, 5 denars, 10 denars and 20 denars. The teacher (or volunteers from the students) should sell the improvised groceries in the classroom. Before the market 'opens' each student should make a list of everything that they want to buy for the next day in school. Each fruit or vegetable has a different price. At the end, each student should tell how many pieces they got, each at what price, how many they paid for each type of grocery, what change did they get, etc.
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos to the actual students work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	After this practise students can do addition multiplication and subtraction faster and more precise. Students feel that they can help in the market when grocery shopping with their family. Big part of this practice is planning their 'budget' and items that they need/want. Students start understanding the difference between what they want and what they need.
11. ASSESSMENT	Suggested assessment method for the students	<p>The marking point should be scheduled based on the following criteria:</p> <ul style="list-style-type: none"> • What portion of the items on the shopping list is bought • Correctly calculating the amount of money, they should pay and get change for. • Getting the max number of pieces, they could get from the list (optimizing the budget) • Their understanding about what they could have bought more and what to leave out.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://drive.google.com/open?id=0B97-RYVZgbqDVUpFTzd3TFJxWG8 https://drive.google.com/open?id=0B97-RYVZgbqDbVFfcEtTVkVRdWM

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Comparing Decimals Game
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	http://www.teacher.org/lesson-plan/comparing-decimals-game
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	Students will play a game in which they choose cards and choose the best place to put the number they have chosen in order to get the highest answer possible.
6. RESOURCES	Required resources for effective application of the method.	1 copy of the 2 page worksheet (attached) 1 deck of cards per pair of students (with Jacks, Queens and Kings removed) 1 pencil
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	Students will read, write, and compare decimals to thousandths. Students will compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	Since you're the oldest, select a card from the deck. Think aloud as you choose where to place the number you selected. Call on a student to select the next card and have him decide where to put his card and state the value based on the place he chose. Continue until all of the spaces are filled in. Read your final number in the correct form. Call on a student to read the class' number and help them to read it in correct form. Ask students who has the greater number. On page 2, write your number in the Player 1 space and the class' number in the player 2 place. Ask them which one of the symbols belongs in the middle, $<$, $=$, or $>$ Explain that player one always writes their number in the Player 1 place and player 2 always in the player 2 place, but you will write a different symbol based on who's number is

		<p>greater.</p> <p>Circle or highlight the greater number to show which partner won this round.</p> <p>Give students time to play the game with their partners.</p> <p>You may choose to have them play multiple rounds with one partner or change partners after each round.</p>
9. EVIDENCE	Links for videos, photos.	The source did not contain photos or videos of the actual students work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>The students learn the value of the number depends on the place he number is set into. They learn to compare numbers with decimal spaces.</p> <p>The students think of this practice as it is a game and do not feel the pressure of getting the wrong answer.</p>
11. ASSESSMENT	Suggested assessment method for the students	Students analyze and compare the results of the game, teacher can check the comparison in part 2 of the worksheet and assess students in this way.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	http://www.teacher.org/wp-content/plugins/download-attachments/includes/download.php?id=20057

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Math class assisted by parents
2. COUNTRY	In which country does the good practice take place?	Romania
3. LINK	Please give a web link for further information about the good practice.	http://everydaymath.uchicago.edu/parents/
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>A group of pupils are taught the information needed to reach a certain level of performance</p> <p>Each pupil will respond to at least two theoretical questions and solve at the blackboard an exercise which will be evaluated by his colleagues</p>
6. RESOURCES	Required resources for effective application of the method.	worksheets, marker
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<p>Awakening the interest of any student for the in-depth study of mathematics, closely related to the national exam</p> <p>* The opportunity for each parent to observe their child compared with their classmates, both in terms of training and emotionally.</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Make an overview of the theoretical concepts learned in plane geometry (7th grade) and geometry in space (8th grade) through questions asked by their fellow students.</p> <p>Each student is given a sheet with algebra problems proposed to be solved.</p> <p>The board is divided into six parts.</p> <p>Each student randomly draws a ticket with a problem to be solved at the board.</p>

		<p>The classmates are divided into six groups.</p> <p>Each group seeks to solve the problem of one of the colleagues from the board and intervene when needed.</p> <p>In the end, the teacher makes an assessment on the way the activities were carried on.</p>
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos of the actual student work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>The whole activity was very interesting and instructive.</p> <p>Following this activity, each student, under the guidance of the teacher and checked closely by their parents, can improve school performance.</p>
11. ASSESSMENT	Suggested assessment method for the students	Students who have solved the problems well receive extra work for improving their knowledge, and the others try to get up-to-date with what they need to know.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Discovery learning
2. COUNTRY	In which country does the good practice take place?	Macedonia
3. LINK	Please give a web link for further information about the good practice.	https://www.learning-theories.com/discovery-learning-bruner.html http://www.teach-nology.com/teachers/methods/theories/discovery.html http://www.learnnc.org/lp/pages/5352
4. LANGUAGE	Language of the source.	USA
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	Discovery learning is an inquiry-based, constructivist learning theory that takes place in problem solving situations where the learner draws on his or her own past experience and existing knowledge to discover facts and relationships and new truths to be learned [1]. As a result, students may be more likely to remember concepts and knowledge discovered on their own [2].
6. RESOURCES	Required resources for effective application of the method.	http://floridarti.usf.edu/resources/format/pdf/Classroom%20Cognitive%20and%20Metacognitive%20Strategies%20for%20Teachers_Revised_S_R_09.08.10.pdf
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<ol style="list-style-type: none"> 1. encourages active engagement 2. promotes motivation 3. promotes autonomy, responsibility, independence 4. develops creativity and problem solving skills. 5. tailors learning experiences
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	Students interact with the world by exploring and manipulating objects, wrestling with questions and controversies, or performing experiments.
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos of the actual student work.
10. RESULTS	Max 75-100 words. <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. 	In the process of learning through discovery, the focus is on the search for solutions from elements already known The deductive way of learning through discovery

	<ul style="list-style-type: none"> What is the users/target group's opinion of the activity? 	is specific to learning activities it which identifying ways of working (for example, multiplication as repeated addition) is required. Students form their correlation capabilities by applying the results found in the proposed exercises.
11. ASSESSMENT	Suggested assessment method for the students	Can be done by self-assessment, filling check lists (analytic or holistic); by simple tracking student's work.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Game and simulation
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	http://www.thirteen.org/get-the-math/files/2011/10/vidgamesfulllesson.pdf
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>A procedure which employs skills and/or chance and has a winner</p> <p>Predominantly used to practice and reinforce basic skills, additionally can be used to introduce new concepts and develop logical thinking and P.S. strategies</p> <p>A simulation can be defined as a reconstruction of a situation or a series of events which may happen in any community.</p> <p>A simulation required each pupil to make decisions based on previous training and available information.</p> <p>After the pupils make a decision, they are provided with opportunities to see or discuss one or more possible consequences of this decision—in some ways simulations are really sophisticated games such as monopoly.</p>
6. RESOURCES	Required resources for effective application of the method.	Computer, game, board.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<p>1. Usually highly motivating</p> <p>2. Pupils enjoy playing games</p> <p>3. More likely to generate greater understanding and retention</p> <p>4. Games are an active approach to learning</p> <p>5. Good attitudes to math are fostered through games</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Pikado.docx</p> <p>http://www.thirteen.org/get-the-math/files/2011/10/vidgamesfulllesson.pdf</p>
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos of

		the actual student work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> It is related to pupil's own experience and thus motivating It is an active approach to learning It fosters retention It develops new roles functions for both teacher and pupil It fosters cooperation among students It relates mathematics to 'real-life situations'. <p>When designed well, both simulations and gaming environments can facilitate students' learning of both specific domain knowledge and concepts, and several cognitive skills like pattern recognition, decision-making and problem-solving</p> <p>gaming could be used effectively to provoke interest, teach domain knowledge</p> <p>games strengthened students' engagement, information processing, problem-solving, social development, and academic abilities.</p> <p>Other educational strengths of using games and simulations include developing a variety of cognitive objectives, transferable process skills, student-centered learning, initiative, creative thinking, affective objectives, sense of completion, and knowledge integration</p> <p>Student effectiveness increases when they are afforded opportunities to contribute to the game design and create new games</p> <ul style="list-style-type: none"> Students' motivation, skills, and ability to explore, experiment and collaborate increased by playing computer games With realistic games, students not only become smarter and intellectually engaged but also realize their desire for hard fun, delayed gratification, rewards, making right decisions, participation, depth of understanding, challenge, and using their pattern recognition and problem-solving skills
11. ASSESSMENT	Suggested assessment method for the students	E-test
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	Pikado.docx http://www.thirteen.org/get-the-math/files/2011/10/vidgamesfulllesson.pdf

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Algorithmic method
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	https://diuu.bg/emag/3647/3/
4. LANGUAGE	Language of the source.	Bulgarian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>The problem with the algorithms is a problem for detection and analysis of mental activity, as in solving tasks and in life in general.</p> <p>In mathematics algorithmic approach leads to larger specialization and improvement. It is important to ensure the most favorable conditions for the processing and utilization of information from students and maximum development of their cognition.</p> <p>Construction of efficient algorithms of training involves a logical analysis of the submitted material for studying and using concepts and simple rules of mathematical logic.</p>
6. RESOURCES	Required resources for effective application of the method.	Theoretical sources. Textbooks. Workbooks and manuals.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<p>-Algorithmic method reveals an opportunity for leadership and management of the learning process.</p> <p>- Are developing intellectual and practical skills.</p> <p>- Students learn how to learn and what to learn.</p> <p>- Creative thinking;</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>1. Choose a theme for the application of the method (The introduction of formulas to calculate the roots of quadratic equation)</p> <p>2. Logic activities:</p> <ul style="list-style-type: none"> - conditions for application; - researching possibilities of number of solutions; <p>3. Determination of training actions – (performed</p>

		<p>mathematical operations)</p> <p>4. Determining the way of their connection –(logical circuit of the algorithm)</p>
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos of the actual student work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>Training algorithms enhances creative search, guesswork, intuition.</p> <p>Serve to develop a number of important qualities of logical and creative thinking of students as suggesting such a method in which students prepare to independently detect the required algorithm.</p>
11. ASSESSMENT	Suggested assessment method for the students	<p>individual assessment:</p> <ul style="list-style-type: none"> - Learning algorithm; - Application of the algorithm; - Detecting situations of application of the algorithm;
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	-

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Didactic games in mathematics
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	www.math.bas.bg/smb/2010_PK/tom/pdf/340-346.pdf priobshti.se/.../izpolzvane-na-didakticheski-igri...
4. LANGUAGE	Language of the source.	Bulgarian language
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	<p>Didactic game in mathematics education is viewed as a powerful means of stimulating active cognitive activities in students; increase their interest in mathematics and leads to easier absorption of learning content.</p> <p>Didactic game plays a crucial role in enhancing the activity of students in the learning process, helps to facilitate absorption of educational content, urges on active cognitive activity greater number of students and increases their interest.</p> <p>Actual pedagogy game is complicated, but simultaneously it is an opportunity for harmonious and spontaneous communication between students and teachers. Throughout the game the students concentrate and mobilize themselves and are able to make great efforts to achieve the goal of the game.</p>
6. RESOURCES	Required resources for effective application of the method.	The source does not contain photos or videos of the actual student work.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	During the game participants acquire skills and habits of concentration and independent thinking; they develop their attention and pursuit of knowledge; They do not notice that they learn to recognize and remember new or assimilate and apply the acquired knowledge; orient themselves in photographic situations by completing the stock of ideas and concepts;

		<p>develop certain habits and imagination. Even the usually passive students in class in mathematics include willingly make efforts not to mislead their peers throughout the game. So didactic game becomes a transformative creative activity located in close cooperation with other types of academic work.</p>
<p>8. HOW DOES IT WORK?</p>	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Orientation:</p> <p>The teacher defines the theme, makes a characteristic of the game and an overview of its moves and rules.</p> <p>Preparations for holding the game:</p> <p>Getting to know with the script, assignment of roles, preparing for their performance, providing procedures for the management of the game.</p> <p>Conducting the game:</p> <p>The teacher monitors the conducting of the game, controls the sequence of the participants' actions, provide the necessary support, reports the results.</p> <p>Discussion of the game:</p> <p>Implemented actions, positive and negative sides during the game, as well as the arisen difficulties are being analyzed; possible ways of the game realization including possible amendments to the rules are also being discussed.</p> <p>A significant part of the didactic games are gaming actions that regulate the rules of the game, stimulate cognitive activities of participants, provide an opportunity to demonstrate their ability to transform knowledge, skills and habits to achieve the objectives of the game.</p> <p>Cognitive content is the basis of didactic game and lies in the utilization of those skills and knowledge that apply in solving educational problems embedded in game. Didactic game has a certain game result which is the end the game and gives its completeness. It occurs primarily in the form of solution to the academic task and brings the student satisfaction.</p>

9. EVIDENCE	Links for videos, photos.	-
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>By playing children mastered the rules of intellectual and practical activities in accessible formats. Intellectual game is an effective form of conducting lessons in mathematics as the knowledge acquired with interest are the soundest. Students take up the game and not pay attention to the fact that in the process of playing they have to solve serious tasks.</p> <p>The use of didactic games in teaching mathematics enables students to develop, refine and consolidate their observation, to form team working skills, teaches them to listen and respect other opinions, to develop their creative abilities. Children are much more free, responsible, creative, active and independent. The game helps to create and maintain a benevolent, positive psychological climate in the students' team.</p>
11. ASSESSMENT	Suggested assessment method for the students	-
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://drive.google.com/open?id=0B4ls-AtzeWJ9OW5FbzBOSINOSFU

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Individual work in mathematics lesson
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	www.math.bas.bg/omi/DidMod/Articles/statiaKP.pdf
4. LANGUAGE	Language of the source.	Bulgarian language
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>Individual work is defined as work which is performed without the direct participation of the teacher, but it's being assigned as a task to the students within a particular period. Students consciously strive to achieve the objective of the task, make every effort and express the results of their mental or physical action in one form or another.</p> <p>Individual work is a means of educating students to self-activity, as well as a means of developing their independence of thinking and actions. By means of an active individual work students need to acquire new knowledge, to consolidate, check and apply the ones that have already been acquired; in the course of carrying out their individual activity they should form the ability to rely on themselves.</p>
6. RESOURCES	Required resources for effective application of the method.	Worksheets, selection of tasks by the teacher
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Development of a higher level of cognitive autonomy. • Consolidate the theoretical knowledge. • Distinguish the essential from non-essential links in the process of teaching mathematics. • Reinforcement of knowledge and skills by solving various tasks. • Performing comparative analysis between studying math concepts.

8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Individual work of consolidation, expansion and improvement of acquired knowledge.</p> <p>What is necessary for implementation of individual work?</p> <ol style="list-style-type: none"> 1. Individual work needs to be realized by students; they have to be aware of its purpose and meaning. When students are assigned tasks for individual work they need to be in the clear with the aim to be achieved after their solution. 2. Compliance with the degree of formation of mental and practical skills as well as students' learning habits with their skills to work independently. 3. Implementation of the principles of accessibility and systematic. 4. Using of instructions in oral, written or visual form before students start their individual work. 5. Individual work must be followed by analysis.
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos of the actual student work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<p>The selected tasks are of increasing complexity for each additional step. The students climbed all existing stairs have mastered the learning content and receive the highest mark if the tasks had been solved correctly. When time limit is up compulsory correction is done by presenting of task solutions. Students themselves check their solution with red pens, correct their mistakes and evaluate themselves according to the teacher's instructions.</p>
11. ASSESSMENT	Suggested assessment method for the students	Test, discussion
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	<p>https://drive.google.com/open?id=0B4ls-AtzeWJ9b3dUOW95c3FSZms</p> <p>https://drive.google.com/open?id=0B4ls-AtzeWJ9LXVTZ0xYa1fYk0</p>

PART 2: COMMUNICATION SKILLS



MATH Debate

COMMUNICATION SKILLS

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Explicit instruction or Direct Instruction Lesson
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	https://iris.peabody.vanderbilt.edu/module/math/cresource/q3/p06/#content
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	Explicit or direct instruction involves teaching a specific skill or concept in a highly structured environment using clear, direct language. This type of instruction is focused on producing specific learning outcomes and sometimes involves the use of scripted lessons.
6. RESOURCES	Required resources for effective application of the method.	Book, board.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<p>Clearly identifies the expectations for learning;</p> <p>Provides precise instructions;</p> <p>Connect new learning to previously learn.</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Orientation to the Lesson: Teacher gains students' attention; Teacher relates today's lesson to a previously related one; Teacher uses essential questions to activate students' thinking</p> <p>Initial Instruction: Teacher leads completion of several sample problems; Teacher models and instructs students to model problem completion; Teacher points out difficult aspects of problem</p> <p>Teacher-Guided Practice: Students complete problems under teacher supervision; Teacher monitors each student's success in problem completion; Teacher assists students independently; Students may discuss problems</p>

		<p>with each other</p> <p>Independent Practice: Students complete sample problems independently; Students may complete homework as independent practice</p> <p><i>Check: Teacher checks student performance on independent work</i></p>
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos of the actual student work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>This practice enables students to model different mathematical problems to solve and discuss them independently. Also, this practice helps students independently perform their homework based on instruction received during the class.</p> <p>The group's opinion on the activity is positive because they take all the necessary instructions from the teacher to solve independently the mathematical problems.</p>
11. ASSESSMENT	Suggested assessment method for the students	Competition
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	/

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Cooperative learning
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	https://iris.peabody.vanderbilt.edu/module/math/cresource/q3/p08/#content
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION)	Max 50 words.	Cooperative learning is a teaching method that uses small, heterogeneous (that is, mixed-

OF THE METHOD)	Please summarise the main characteristics of the teaching practice.	ability) groups to maximize the learning of each of those groups' members.
6. RESOURCES	Required resources for effective application of the method.	Book, notebook, flipchart
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	Lead to greater motivation toward learning Increase time on task Improve self-esteem
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	Teacher assigning students to small groups for a cooperative-learning task. The students then work together to solve a mathematic problem.
9. EVIDENCE	Links for videos, photos.	https://iris.peabody.vanderbilt.edu/wp-content/uploads/module_media/math_media/movies/math_08_angle.mp4
10. RESULTS	Max 75-100 words. <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	Discussing and solving problems as a group can help students to move from a concrete level of understanding to a more abstract level of understanding. Cooperative learning also helps students to develop social skills by creating a context for interaction. Research has demonstrated that some cooperative learning programs (i.e., Team-Accelerated Instruction [TAI], Student Teams-Achievement Divisions [STAD]) have yielded favourable results for improving computation skills.
11. ASSESSMENT	Suggested assessment method for the students	Competition
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	/

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	'Famous mathematicians'-throw-out history of mathematics
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	http://atlantis.coe.uh.edu/archive/math/math_lessons/mathles2.html
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	Students in groups of two will research a particular mathematician.
6. RESOURCES	Required resources for effective application of the method.	World Map, stick pins, colour paper for creating a timeline
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Identifying with a mathematician • Increase research skills • Presentation skills
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	The teacher should become familiar with all resources available at the school for student research on mathematicians. Web sites can be bookmarked or lists of mathematicians posted from web sites for students to easily use as resources. World map is in the room with small cards and pins for identifying home countries of the mathematicians. The teacher "proposes" the area of investigation. The teacher can excite the students about this projects by telling the students about some of the famous mathematicians. The students in the class may have some knowledge from past studies that can be shared in class. Facts about mathematician's lives is not the focus of this lesson. The students should come away with an interest in learning more about these mathematicians and an overall appreciation for these mathematicians. The students, when creating their models, should have the opportunity to discuss their model with other students and with the teacher. Applying the the

		knowledge that was learned from the research of the mathematician to the created model design will be the problem-solving part of this lesson for students. Every student will have a different "construction" of knowledge, so the assignments will vary considerable.
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos of the actual student work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	Students, especially students that struggle with math learn to understand that all formulas are invented by humans, that somebody actually thought of them and it took some time to get there. They identify themselves with a person that is good in mathematics and find common grounds with him/her. Students feel encouraged to do mathematics, as it is not something that is done only by prodigies.
11. ASSESSMENT	Suggested assessment method for the students	Assessment methods should measure the level of involvement in the practice: how dedicated and open to the problem the student was, how good and detailed the research was, and last how deducted the student was into impersonating the name that they got. The teacher and students have decided upon evaluation criteria which has been posted in the classroom from the beginning of the assignment.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	http://atlantis.coe.uh.edu/archive/math/math_lessons/mathles2.html

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Peer Tutoring
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	https://iris.peabody.vanderbilt.edu/module/math/cresource/q3/p07/#content
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	In peer tutoring, two students work together on an instructional activity. Two peer-tutoring approaches (i.e., Peer Assisted Learning Strategies Math, Class Wide Peer Tutoring) have been shown to be highly effective for teaching mathematics. These strategies have several features in common: Reciprocal peer tutoring (i.e., during the session, each student in the pair serves as a coach and as a tutee).
6. RESOURCES	Required resources for effective application of the method.	No special resources are needed
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	Students work together; each student in the pair serves as a coach and as a tutee; students switch roles.
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Frequent verbal interaction and feedback between the coach and tutee</p> <p>Use of positive reinforcement</p> <p>A competitive game format</p> <p>Teacher monitoring and feedback</p>
9. EVIDENCE	Links for videos, photos.	https://iris.peabody.vanderbilt.edu/wp-content/uploads/module_media/math_media/movies/math_07_PALS.mp4
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the 	In peer tutoring, two students work together on an instructional activity (e.g., learning multiplication tables, practicing two-digit addition

	<p>teaching goals.</p> <ul style="list-style-type: none"> What is the users/target group's opinion of the activity? 	<p>with carrying). The pairs of students can be of the same or different ability levels.</p> <p>Peer tutoring was not designed as a method of teaching new skills. Rather, it provides students opportunities to practice a newly learned skill or to review mathematics skills while receiving feedback.</p> <p>The users opinion of this activity is positive because it is interesting.</p>
11. ASSESSMENT	Suggested assessment method for the students	Test
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	/

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Project
2. COUNTRY	In which country does the good practice take place?	Romania
3. LINK	Please give a web link for further information about the good practice.	http://webcache.googleusercontent.com/search?q=cache:48Fx6H-cQUwJ:www.tvet.ro/Anexe/4.Anexe/Teste%2520de%2520evaluare2006/Textile%2520pielarie/Despre%2520proiect.doc+&cd=5&hl=ro&ct=clnk&gl=ro
4. LANGUAGE	Language of the source.	Romanian
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 100 words. Please summarise the main characteristics of the practice.	<ul style="list-style-type: none"> - it takes place over several weeks - the theme and the working groups (heterogeneous) are determined - Students look for information, combine it, formulate problems and seek solutions - The project involves a final product as a result of collecting and processing data - The final product combines the text with drawing, collage or model
6. RESOURCES	Required resources for effective applying of the method.	<ul style="list-style-type: none"> - theoretical knowledge from the school curriculum - Internet, media sources - material resources from which to manufacture the final product
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a good practice.	<ul style="list-style-type: none"> - is a cooperative method; Mutual learning is a type of effective learning - It values each student, using them individually at different stages of the project - Can measure performance and progress due to workload individualization - socialization
8. HOW DOES IT WORK?	Max 100 words. Which actions does the practice involve?	<ul style="list-style-type: none"> - the theme is suggested by the teacher, but consulting the students - working groups (5-6 students) are formed - the teacher names the group leaders, and they choose their group members. - the idea of making the final product lies with each group, in accordance with the theme - each group leader is concerned with the work allocation within the group so that each member can contribute, as well as with the work schedule (meetings)

		<ul style="list-style-type: none"> - the project is done in school, but also outside it - the students discuss the execution stage throughout the project - each student uses creativity to do the task - the teacher advises the groups - the final product is presented in an organized environment - evaluation is done as follows: self-assessment, evaluation between groups, teacher assessment - with strengths and weaknesses
9. EVIDENCE	Links for videos, photos.	https://youtu.be/LMCZvGesRz8 https://drive.google.com/drive/folders/0B3gtwSuuS-LgNXhPQWV5VU9nS1E
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the goals. ▪ What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> - promotes the overall development of personality, by using knowledge from various school subjects, by integrating knowledge, capabilities, skills and attitudes / values - stimulates students' responsibility by enabling them to select the themes and the means of achieving the goals - assesses students in learning - focuses on identifying / formulating problems and then on solving them - engages students in real-life situations - shifts the emphasis from "learn about" to "know how"; promotes learning through direct contact with things (active school) - encourages self- thinking, rather than memorizing or recognizing the information - are interactive, engage students in understanding the evaluation process
11. ASSESSMENT	Suggested assessment method for the students	Competition, assessment of the posters for projects, students' voting for posters
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	/

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	The Pyramid (snowball method)
2. COUNTRY	In which country does the good practice take place?	Romania
3. LINK	Please give a web link for further information about the good practice.	http://www.projekt-matematyka.eu/images/Modern_Methods_of_Teaching.pdf
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>The method follows the gradual accumulation of students' opinions.</p> <p>Its basic principle is mixing individual activities with group activities.</p>
6. RESOURCES	Required resources for effective application of the method.	No special resources are needed
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<p>Allows each participant to take turns working with one colleague, then with the members of a group and then with the whole class.</p> <p>The Pyramid stimulates discussion boldness even in the shyest students, especially in the initial pair.</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>The teacher gives the students the problem in question</p> <p>Students solve the task individually, write down the answers and the misunderstandings.</p> <p>They form groups of two students, who discuss the results reached and write down the newly emerged unknowns.</p> <p>Two initial groups gather in larger groups who discuss about chosen solutions.</p> <p>The entire class discuss the task.</p>
9. EVIDENCE	Links for videos, photos.	

10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<p>The method facilitates communication and student creativity It stimulates the imagination of all participants It stimulate competitiveness, but also on the cooperation because it ensures collective and active participation of all members of the class</p>
11. ASSESSMENT	Suggested assessment method for the students	<p>The solutions found are analyzed with the whole class; the same thing is done with the issues that still require answers. The best solution is chosen, the whole class reaching a consensus. By applying this method, it is difficult to assess each participant.</p>
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	The mosaic method
2. COUNTRY	In which country does the good practice take place?	Romania
3. LINK	Please give a web link for further information about the good practice.	https://www.youtube.com/watch?v=aXkRe5hdQRU https://www.youtube.com/watch?v=hT-Wik7TRn8 https://www.youtube.com/watch?v=15XPHLlqVZE
4. LANGUAGE	Language of the source.	Romanian
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	This is the interdependent groups method. It is a strategy based on peer learning. Each student has a learning task where they have to become expert. All responsibility lies with the transmission of assimilated information towards other colleagues.
6. RESOURCES	Required resources for effective application of the method.	Flip chart, marker
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<ul style="list-style-type: none"> - increasing pupils' motivation, because they are aware that they can influence learning - Greater efficiency of applying the acquired knowledge - The lesson is more interesting for each student, because each student is involved in understanding the contents which then he has to be able to apply in real life
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	<p>mosaic method is done in five stages:</p> <ol style="list-style-type: none"> 1. Preparation of the material: <ul style="list-style-type: none"> - the teacher sets a theme for study and divides it into four or five sub-themes. - the main elements that the student need to focus on when studying the material independently are established - makes an expert sheet with the 4-5 sub-themes that will be offered to each group 2. organizing the students in teams (4-5 students)

		<ul style="list-style-type: none"> - Each student in a team receives a letter (A, B, C, D) and his task is to study by himself the theme from the sheet A, B, C, D - Each student studies the task received on his own <p>3. creating the groups of experts</p> <ul style="list-style-type: none"> - groups of experts with the same letter are created, to discuss the problem together - they talk based on data and materials at their disposal, and new items are added. Each member is taught as well as possible, afterwards having the responsibility of teaching the colleagues from the initial team <p>4. returning to the original team learning</p> <ul style="list-style-type: none"> - Every expert presents, concisely and attractively, to his colleagues the theme prepared by him - The group members are encouraged to discuss, ask questions and take notes <p>5. evaluation</p> <ul style="list-style-type: none"> - the groups share their results with the whole class
9. EVIDENCE	Links for videos, photos.	https://www.youtube.com/watch?v=5JMhC4_NByQ
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<p>boosting students' confidence</p> <ul style="list-style-type: none"> - development of argumentative communication activities within the group <p>development of individual and group responsibility</p> <p>optimize learning by teaching someone else's acquisitions</p>
11. ASSESSMENT	Suggested assessment method for the students	interdependence between members and individualization of each contribution leads to each individual's affirmation and to increased self-confidence
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	http://www.creeaza.com/didactica/didactica-pedagogie/PREZENTAREA-INVESTIGATIILOR-PR123.php http://www.teachhub.com/jigsaw-method-teaching-strategy

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	The Cluster method
2. COUNTRY	In which country does the good practice take place?	Romania
3. LINK	Please give a web link for further information about the good practice.	https://eric.ed.gov/?id=EJ946291 https://www.academia.edu/1025684/The_efficiency_of_cluster_method_in_improving_the_creative_writing_skill_of_6th_grade_students_of_primary_school
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	- can be used especially when updating the structures previously learned or in the evocation stage, students having to establish connections between the elements studied and being actively involved in the thinking process.
6. RESOURCES	Required resources for effective application of the method.	No special resources are needed
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	- after solving the task, the students will use the concepts and links created to develop concrete ideas about the new concept. This exercise encourages participation of the whole class.
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	. - students will write a new word or a nucleus phrase in the center of a sheet of paper. - Students are invited to write as many words or phrases that come to mind about the selected topic. - Words (ideas) will be linked by lines to the central notion or, if appropriate, to one suggested by the students. - At the end of the exercise the entire structure will be commented and explained. - The whole class takes part in the "cluster" and they attempt to discover new connections related to the proposed word/ phrase.
9. EVIDENCE	Links for videos, photos.	https://ro.pinterest.com/explore/division-strategies/?lp=true

10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>- this technique is meant to encourage students to think freely and to stimulate idea connections.</p> <p>- It is a way of achieving associations of ideas or of providing new meanings to previously acquired ideas.</p> <p>- Clusters can be done individually or as a group activity.</p>
11. ASSESSMENT	Suggested assessment method for the students	Debate, discussion
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://iteach.ro/pg/blog/vasilica.ghita/read/67028/elevii-cu-ces-o-activitate-la-disciplina-matematica

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Brainstorming
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	https://www.forbes.com/sites/susanadams/2013/03/05/4-steps-to-successful-brainstorming/#593eb4595992
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>Consists of expressing the opinions freely, without any prejudices.</p> <p>- ideas on how to resolve a problem are needed; criticism will under no circumstances be admitted.</p> <p>- all ideas are written on the board, followed by a break for the ideas to sink in, during which everybody reflects on them</p> <p>- the Ideas are taken one by one and are grouped by category. Symbols, keywords, etc.</p> <p>- The next step is the critical analysis, followed by evaluation, argument, counter-argument of the ideas previously issued. Then the original ideas are selected, or the feasible solutions to</p>

		the problem to be solved.
6. RESOURCES	Required resources for effective application of the method.	Files
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<ul style="list-style-type: none"> - can assess students' knowledge on a certain topic, usually at the beginning of a chapter - Is a creative deliberation in order to generate in a short period of time, within a group, a multitude of ideas that can help to solve a problem.
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Development technique</p> <ul style="list-style-type: none"> - Enunciation of theme and side talks - Reformulating the theme "How to ...?" - Choosing an essential reformulation and writing it down: "How many ways can we ...?" - warming-up - Brainstorming itself. - The most interesting idea <p>The evaluation aims to identify the most interesting ideas that can be applied in practice, and demonstrating that participants effort in the brainstorming was not in vain, their ideas being followed by action.</p>
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos of the actual student work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<p>The fundamental objective of this method is the free expression of opinion, without prejudices. All ideas are accepted, even the wacky, unusual, strange and fantastic, as they come in the minds of students, whether or not they lead to solutions.</p> <p>To advance in learning, the students need to be trained in the exchange of ideas.</p>
11. ASSESSMENT	Suggested assessment method for the students	Competition
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://dschool-old.stanford.edu/sandbox/groups/dstudio/wiki/2fced/attachments/660d8/Brainstorming-Method.pdf?sessionID=d07c198d92501ebb3ee4ff3da193b387130fcfbf

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	The gallery walk
2. COUNTRY	In which country does the good practice take place?	Romania
3. LINK	Please give a web link for further information about the good practice.	https://innerspacejournal.wordpress.com/2012/10/24/metode-si-tehnici-de-invatare-prin-colaborare-interactive-turul-galeriei/
4. LANGUAGE	Language of the source.	Romanian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<ul style="list-style-type: none"> - Students are divided into groups of 4-5 members heterogeneous, depending on the number of students in class - The teacher gives students the assignment - Each group will produce a product on previously established theme - Flip-chart products will be exhibited on the walls of class - A designated student group presents, if need be, the in front of all students - Analysis of all works (each product is reviewed, completed, corrected and evaluated by other groups) - the groups re-examine their own products, comparing to the others
6. RESOURCES	Required resources for effective application of the method.	<ul style="list-style-type: none"> - Flip-chart sheets, markers, tape, handouts
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<ul style="list-style-type: none"> - It is a method of learning through cooperation; - encourages students to express their opinions; - the gallery walk involves interactive and deeply formative assessment of products made by the students (groups);
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<ul style="list-style-type: none"> - Follows the expression of personal views on the proposed theme - Students learn to listen, to understand and accept others' ideas or to reject them by demonstrating the validity of sustained ideas - Stimulates creativity of participants, individual and collective thinking

		<ul style="list-style-type: none"> - Develops social capabilities of the participants - intercommunication and mutual tolerance, respect for each other's opinion - Attracts and arouses students' interest, creating interactions between them
9. EVIDENCE	Links for videos, photos.	https://youtu.be/pSt5echeRrM https://youtu.be/6LIXhXJeccg
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> - Promotes interaction between participants' minds, between their personalities, leading to a more active learning and obvious results - Stimulates individual effort and productivity and is important for selfdiscovering the students' own capacities and limits - There is an intergroup dynamic with favorable influences on personality, and the subjects working in teams are able to apply and synthesize knowledge in varied and complex ways - Develop and diversify their skills, abilities and social skills of students - Minimize the phenomenon of emotional blockage of creativity
11. ASSESSMENT	Suggested assessment method for the students	Voting for posters
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional file

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Flipped Classroom
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	http://mulletstein.weebly.com/unit-5-geometry.html https://net.educause.edu/ir/library/pdf/eli7081.pdf
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	The flipped classroom is a pedagogical model in which the typical lecture and homework elements of a course are reversed. The flipped classroom is where students watch the video lesson and learn the material at home then come to school and have class time to work on problems where the teacher and fellow students are available to answer questions. This teaching technique addresses the typical math classroom problem: Students passively listen to the lecture, begin the homework (only getting to the easy ones), go home and get stuck. Instead, students are able to tackle the "difficult" part of the learning-the problems-in the classroom where there is immediate help available from the teacher and peers.
6. RESOURCES	Required resources for effective application of the method.	http://mulletstein.weebly.com/unit-5-geometry.html http://www.flippedmath.com/
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> Increases student engagement Strengthens team-based skills Offers differentiated instruction Provides opportunity for teacher to meet with students one-on-one Increases opportunity for higher-order thinking skills Fosters 21st Century learning environments Increases contact time with students Increases student responsibility and buy-in Maximizes learning opportunities even when absent

		<ul style="list-style-type: none"> ▪ Direction instruction meets constructivist learning ▪ Passive listeners become active learners ▪ Easier to make real-life connections to content ▪ Forces teacher into the role of "guide" ▪ Increases hands-on learning time ▪ Learning is student-driven ▪ Anytime tutoring ▪ Parental Involvement
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>How Does The Flipped Classroom Work?</p> <p>Technological pre-learning: In the flipped classroom, the class is not organized around the teacher's lectures. Instead, students are required to learn the material before class, allowing them to clear up any misunderstandings while the teacher is available. This "pre-learning" is often accomplished online, with the teacher posting instructional videos for students to watch at home.</p> <p>Reading and writing: Students read textbooks or conduct online investigations outside of class. Teachers have them write reactions to the readings or prepare questions to ask during class time.</p> <p>Classroom assistance: Once students are in the classroom, they are able to obtain one-on-one help from teachers and teacher's aides. The teacher may split the students up into groups to work on projects or hold discussions. Meanwhile, he or she is in the room offering help to students who have questions or who are struggling.</p> <p>Enrichment activities: The classroom experience may also be supplemented by labs, hands-on projects or field trips. Activities like these are often successful in capturing student interest, making them more likely to continue to study concepts on their own.</p>
9. EVIDENCE	Links for videos, photos.	http://mulletstein.weebly.com/unit-5-geometry.html
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the 	<p>The biggest advantage of the flipped classroom approach is the element of active participation. When taught in the traditional lecture-and-note manner, students often grow bored and find themselves interested in</p>

	users/target group's opinion of the activity?	everything but the content covered by the teacher. Proponents of the flipped classroom argue that it is better to let students learn the material at their own pace in a comfortable home environment with the help of readings, videos and online material. Then they can pursue interactive learning activities in the classroom while receiving personalized attention from the teacher.
11. ASSESSMENT	Suggested assessment method for the students	<ul style="list-style-type: none"> ▪ Watch, summarize, question protocol ▪ Embed video into a Google Form to include questions - instantly group students by level of understanding. ▪ Student Interviews (individual or small group) ▪ Performance assessments ▪ Projects ▪ Class discussion
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	07b Flipped Classroom Lesson Plan Template.docx FlippedLessonPlanTemplate-website.docx FlippedClassroom.docx Flipped Lesson Plan Template.doc 07e Flipped Classroom Student Learning Checklist.docx 07d Flipped Lesson Plan Presentation Rubric.docx 07c Flipped Classroom Lesson Plan Rubric.docx

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Measuring angels with jigsaw method
2. COUNTRY	In which country does the good practice take place?	UK
3. LINK	Please give a web link for further information about the good practice.	https://www.mathspad.co.uk/teach/lessonPlans/anglesJigsawProject.php
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>The jigsaw classroom is a research-based cooperative learning technique. The “Jigsaw Method” is a teaching strategy of organizing student group work that helps students collaborate and rely on one another. This teaching strategy is effective for accomplishing multiple tasks at once and for giving students a greater sense of individual responsibility.</p> <p>The Jigsaw method is a cooperative learning technique in which students work in small groups. Jigsaw can be used in a variety of ways for a variety of goals, but it is primarily used for the acquisition and presentation of new material, review, or informed debate..</p>
6. RESOURCES	Required resources for effective application of the method.	Ruler, agglomerate
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<p>This Strategy allows for:</p> <ul style="list-style-type: none"> • An efficient way to learn content. • Development of listening, engagement, and empathy skills. • A way for students to work independently. • Interaction among all students.
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Here is the basic way this popular teaching strategy is used in classrooms:</p> <p>Step 1: Organize students into a group of 4-6 people.</p> <p>Step 2: Divide the day's reading or lesson into 4-6 parts, and assign one student in each group to be responsible for a different segment.</p> <p>Step 3: Give students time to learn and process</p>

		<p>their assigned segment independently.</p> <p>Step 4: Put students who completed the same segment together into an “Expert group” to talk about and process the details of their segment.</p> <p>Step 5: Have students return to their original “Jigsaw” groups and take turns sharing the segments they’ve become experts on.</p> <p>Step 6: Have students complete a task or a quiz that’s reliant on them having understood the material from the contributions of all their group members.</p> <p>During this whole process, where’s the teacher? At first, the teacher facilitates the arranging of groups, explaining of roles, and timing for each portion. Notice that the teacher doesn’t have to lecture or be the focal point of attention. When the students are in groups for steps 4 and 5, the teacher should walk amongst the groups and lend support or explanation where necessary.</p> <p>With this simple approach to group work, each individual has something unique to contribute to their group’s outcome. No one else in the group is doing the same task, so each student experiences a higher sense of ownership and accountability to the members of their group.</p> <p>The teacher may find it valuable to appoint one student in each group as the “Leader” who can manage time, make sure each student contributes their part, and ensure the group is accomplishing the goals. The most mature student in each group might be the best option; however, teachers should consider how the disengaged, the diffident, or the problem students might benefit from being the leader.</p>
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos of the actual student work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group’s opinion of the activity? 	<p>The jigsaw method allows the teacher to break students into groups and assignments into smaller pieces, all for accomplishing tasks with more detail and collaboration. “Jigsaw” draws a direct image to a jigsaw puzzle. Just as the final image of a puzzle is constructed from many separate pieces fitting together, so too are academic tasks completed when members of the team offer unique, jigsaw-cut efforts to the group</p> <p>When working independently, students are</p>

		<p>accountable strictly to themselves.</p> <p>The jigsaw method gives students a sense of ownership and belonging – feelings hard to experience when working alone.</p> <p>In addition to having shared responsibility to the group setting, students gain the benefit of learning from those different from themselves.</p> <p>While individual students could be required to do the entirety of a project on their own, the fact that they have the opportunity to listen to the perspectives of others enhances the quality of their education.</p> <p>Jigsawing requires students to listen and learn, and the group is rewarded when each individual contributes their skills and knowledge to the whole. Not only is learning improved, but tolerance and understanding is as well</p>
11. ASSESSMENT	Suggested assessment method for the students	Test tasks and check lists
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	Measurin-angels-with-jigsaw-method.docx https://www.mathspad.co.uk/teach/angles.php#i nter

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1.TITLE	What is the name that best describes the good practice?	JIGSAW PUZZLES
2.COUNTRY	In which country does the good practice take place?	UK
3.LINK	Please give a web link for further information about the good practice.	https://www.jigsaw.org/#steps http://www.teachhub.com/jigsaw-method-teaching-strategy
4.LANGUAGE	Language of the source.	English
5.SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	Teachers arrange students in groups. Each group member is assigned a different piece of information. Group members then join with members of other groups assigned the same piece of information, and research and/or share ideas about the information. Eventually, students return to their original groups to try to "piece together" a clear picture of the topic at hand. That's the simple overview.
6.RESOURCE	Required resources for effective application of the method.	The resources below will fill in the details and provide examples of the technique in action.
7.WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	The cooperative learning strategy known as the "jigsaw" technique helps students create their own learning. With this simple approach to group work, each individual has something unique to contribute to their group's outcome. No one else in the group is doing the same task, so each student experiences a higher sense of ownership and accountability to the members of their group.
8.HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	STEP ONE Divide students into 5- or 6-person jigsaw groups. The groups should be diverse in terms of gender, ethnicity, race, and ability. STEP TWO Appoint one student from each group as the leader. Initially, this person should be the most mature student in the group.

		<p>STEP THREE Divide the day's lesson into 5-6 segments. For example, if you want history students to learn about Eleanor Roosevelt, you might divide a short biography of her into stand-alone segments on: (1) Her childhood, (2) Her family life with Franklin and their children, (3) Her life after Franklin contracted polio, (4) Her work in the White House as First Lady, and (5) Her life and work after Franklin's death.</p> <p>STEP FOUR Assign each student to learn one segment. Make sure students have direct access only to their own segment.</p> <p>STEP FIVE Give students time to read over their segment at least twice and become familiar with it. There is no need for them to memorize it.</p> <p>STEP SIX Form temporary "expert groups" by having one student from each jigsaw group join other students assigned to the same segment. Give students in these expert groups time to discuss the main points of their segment and to rehearse the presentations they will make to their jigsaw group.</p> <p>STEP SEVEN Bring the students back into their jigsaw groups.</p> <p>STEP EIGHT Ask each student to present her or his segment to the group. Encourage others in the group to ask questions for clarification.</p> <p>STEP NINE Float from group to group, observing the process. If any group is having trouble (e.g., a member is dominating or disruptive), make an appropriate intervention. Eventually, it's best for the group leader to handle this task. Leaders can be trained by whispering an instruction on how to intervene, until the leader gets the hang of it.</p> <p>STEP TEN At the end of the session, give a quiz on the material. Students quickly come to realize that these sessions are not just fun and games but really count.</p>
9.EVIDENCE	Links for videos, photos.	No photos in the source
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the 	Whatever level or subject you teach, the jigsaw method offers you a chance to neutralize the problems of competitive classroom behaviours and build a cooperative environment. Consider how you'll use this easy technique to boost the learning, relationships, and collaboration in your

	users/target group's opinion of the activity?	classroom this year!
11. ASSESSMENT	Suggested assessment method for the students	Quiz, game
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Students Teams Achievement Division – STAD method
2. COUNTRY	In which country does the good practice take place?	UK
3. LINK	Please give a web link for further information about the good practice.	www.innovativelearning.com/educational_psychology/.../cooperative_learning.doc https://www.ukessays.com/essays/education/student-teams-achievement-divisions-model-cooperative-learning-method-education-essay.php
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	A cooperative learning method for mixed-ability groupings involving team recognition and group responsibility for individual learning. This method shares intergroup cooperation and intergroup competition with the previous one. The teams are composed of high, average, and low performing students, and of boys and girls of different racial or ethnic backgrounds. Thus, each team is a microcosm of the entire class. There are five main steps a teacher should follow when STAD is implemented. The teacher first introduces new materials to be learned. The

		team members then study worksheets on the material until they master the material. Individual quizzes are taken on the material studied. The teacher then combines the scores to create team scores. Members of the winning team are given certificates and a weekly one-page class newsletter recognizes the teams with the highest scores.
6. RESOURCES	Required resources for effective application of the method.	Book, files, worksheets
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Promote collaboration and self-regulating learning skills • Good interaction among students • Improve positive attitude toward subject • Better self-esteem, • Increased interpersonal skills
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>The students are divided into heterogeneous groups of four or five members. The teacher presents a topic to all the class, with all the explanations and exemplifications s/he considers necessary. The students work in teams for different sessions where they discuss, compare, widen, formulate questions, elaborate conceptual maps, basis of orientation, memorize, etc. and make sure all the members of the group have learned what they were asked to.</p> <p>After that, the teacher assesses each student individually and transforms the individual qualification in group qualification using a system known as "performance in divisions". This method compares the performance of each student as regards the reference of a group of a similar level. Thus we make sure each student can contribute to the success of his/her team, given his/her possibilities, and it can also be the case that a student with a lower performance level provides a higher score to his/her team than another student with a higher performance level because she has been better placed in his/her division.</p>
9. EVIDENCE	Links for videos, photos.	No evidence photos in the source
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target 	STAD also add an extra source of learning within the groups because some high achievers act as a role of tutor, which result in high achievements. Finally, it enables the students according to the requirements of the modern society by teaching them to work with their

	group's opinion of the activity?	<p>colleagues competently and successfull</p> <p>Students in groups learn cooperatively resolve the matter according to the basic competencies to be achieved.</p> <p>The group was formed of students who have different skills, good level of high, medium, and low. If possible, group members are from different ethnic or religious serta memperhatikan gender equality.</p> <p>Award more emphasis on group rather than individual.</p> <p>Students work together in achieving its objectives by upholding the norms of the group.</p> <p>Actively assist and motivate students to succeed shared passion.</p> <p>Active role as a peer tutor to further enhance the success of the group.</p> <p>Interaction among students with increasing their ability to argue.</p> <p>The main idea behind the model STAD is to motivate the students to encourage and help each other to master the skills presented by the teacher.</p>
11.ASSESSMENT	Suggested assessment method for the students	Provision of test or quiz
12.UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	Linear equations - Stad method.docx

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Storytelling method
2. COUNTRY	In which country does the good practice take place?	UK
3. LINK	Please give a web link for further information about the good practice.	https://hal.archives-ouvertes.fr/hal-01289881/document https://conference.pixel-online.net/edu_future2012/common/download/Paper_pdf/354-ITL54-FP-Albool-FOE2012.pdf
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>Storytelling is a powerful pedagogical tool. The teacher, the storyteller, and the performer share a similar purpose: to inform, engage, and entertain their audience. They all seek to communicate their message in the most compelling and provocative way possible. Telling a story engages the audience in a unique way. Storytelling, then, is yet another device in the repertoire of a good teacher. It is not only a potent tool for the teacher as a way of organizing information, but as a dynamic means for students to express what they have learned. The magic of storytelling changes the atmosphere in the classroom and in so doing enhances the learning environment. Stories serve to open the mind so that the hearer is ready to take things in. In short, stories appeal to the heart, and, once the heart is won, the mind is open to learn!</p> <p>Stories promote lively imagination on the part of students. When students listen to a story, they create mind pictures, make inferences and predictions, and fill in the gaps. They in a sense become involved in creating the story, thus forming a relationship with the narrative. When packaged as a story, the oral delivery of information promotes greater involvement than does written language.</p>
6. RESOURCES	Required resources for	Computer, board, flipchart

	effective application of the method.	
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<p>Using storytelling as a method of instruction and assessment supports educational objectives. These include:</p> <ul style="list-style-type: none"> • improving verbal skills • gaining self-confidence • discovering the meaning of events • developing a love for language and stories • encouraging higher levels of cognitive thinking • gaining a more in-depth understanding of narration • improving imaginative skills • internalizing the traditional structure and conventions of stories • improving writing skills • Improves listening skills
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>When preparing one's notes for a class lesson, a teacher decides how best to present the material. Consider packaging the information in the form of a story rather than a lecture. When deciding how to help the students to process information, or to assess what students have learned, consider having the students recreate the information in the form of a story and then tell it. Here are some ways that storytelling can be applied to the classroom setting.</p> <ul style="list-style-type: none"> • Create a story to illustrate new concepts or ideas. • Express a topic or theme by narrating a story about it. • Explain historical events by narrating them as stories. • Invent and tell the story of historical figures meeting one another or about characters from different stories meeting. • Put knowledge that needs to be assessed in a narrative form and tell the story to the teacher and class. • Take a familiar story and retell it with characters and situations based on curricular material • Place yourself in a familiar story and narrate the events from your first-person point of view. <p>As a pedagogical tool, teachers should use storytelling to explore cultural diversity, to</p>

		survey storytelling methods, to discover a variety of ways to create stories, to integrate the curriculum, to foster imagination, and to investigate the power of narrative. Stories go beyond the mere presentation of facts; instead, they involve the students by engaging the imagination and promoting conceptual connections to the information being presented.
9. EVIDENCE	Links for videos, photos.	https://www.youtube.com/watch?v=q8-Efax54xQ
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>In order to appeal to different learning styles, it is necessary to transcend the traditional presentation of fact and theory. Stories are concrete; they exemplify concepts better than abstract, non-creative methods. Teaching storytelling also teaches presentation, communication, and writing skills.</p> <p>Storytelling is such an effective tool for the teacher because it is a powerful form of communication. Both the student and the teacher benefit from it. Students learn from hearing stories because they pay closer attention, understand the message more readily, and retain key points longer. Teachers become better educators because being able to tell a story effectively enhances the perception of the teacher as a leader. A teacher who can adeptly tell a tale reveals an approachable, likeable, and human side to his or her personality. This helps to close the distance between the teacher and the students by making the teacher's status less threatening.</p>
11. ASSESSMENT	Suggested assessment method for the students	Test, checklist
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	- IntroductionToTheCartesianPlane (1).pptx - A-fly-on-a-ceiling.doc

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Think-pair-share (TPS)
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	https://www.teachingchannel.org/videos/think-pair-share-lesson-idea http://oame.on.ca/main/files/thinklit/ThinkPairShare.pdf
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	Think-pair-share (TPS) is a collaborative learning strategy in which students work together to solve a problem or answer a question about an assigned reading. This technique requires students to (1) think individually about a topic or answer to a question; and (2) share ideas with classmates. Discussing an answer with a partner serves to maximize participation, focus attention and engage students in comprehending the reading material.
6. RESOURCES	Required resources for effective application of the method.	Electronic board, blackboard, notebook
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	It helps students to think individually about a topic or answer to a question. It teaches students to share ideas with classmates and builds oral communication skills. It helps focus attention and engage students in comprehending the reading material.
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	Decide upon the text to be read and develop the set of questions or prompts that target key content concepts. Describe the purpose of the strategy and provide guidelines for discussions. Model the procedure to ensure that students understand how to use the strategy. Monitor and support students as they work through the following: Think: Teachers begin by asking a specific higher-level question about the text or

		<p>topic students will be discussing. Students "think" about what they know or have learned about the topic for a given amount of time (usually 1-3 minutes).</p> <p>Pair: Each student should be paired with another student. Teachers may choose whether to assign pairs or let students pick their own partner. Remember to be sensitive to learners' needs (reading skills, attention skills, language skills) when creating pairs. Students share their thinking with their partner, discuss ideas, and ask questions of their partner about their thoughts on the topic (2-5 minutes).</p> <p>Share: Once partners have had ample time to share their thoughts and have a discussion, teachers expand the "share" into a whole-class discussion. Allow each group to choose who will present their thoughts, ideas, and questions they had to the rest of the class. After the class "share," you may choose to have pairs reconvene to talk about how their thinking perhaps changed as a result of the "share" element.</p>
9. EVIDENCE	Links for videos, photos.	https://www.teachingchannel.org/videos/think-pair-share-lesson-idea
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>Think-Pair-Share/Partner share is a great strategy for helping students verbalize their thinking and increase student engagement and learning at all levels. The one talking is the one learning. The Think-Pair-Share strategy is a versatile and simple technique for improving students' reading comprehension. It gives students time to think about an answer and activates prior knowledge. TPS enhances students' oral communication skills as they discuss their ideas with one another. This strategy helps students become active participants in learning and can include writing as a way of organizing thoughts generated from discussions. Think-Pair-Share...</p> <ul style="list-style-type: none"> • can be used throughout the lesson. • provides a chance to connect new information. • uses social learning techniques.

11. ASSESSMENT	Suggested assessment method for the students	Test in the paired students
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	DEBATE
2. COUNTRY	In which country does the good practice take place?	Macedonia
3. LINK	Please give a web link for further information about the good practice.	/
4. LANGUAGE	Language of the source.	/
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	A debate involves students in researching and analyzing a controversial topic based on a stance which will lead to a series of oral presentation of standpoints and arguments by the two opposite teams. Debating can be employed as an instructional strategy wherever the learning material and circumstances are open to opposing points of view (Example: Does operation subtracting exists?)
6. RESOURCES	Required resources for effective application of the method.	Classroom with debate placed desks, flipchart for marking the key points from the debate, conclusions and further questions.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	Declarative, Functioning, Take Time to Answer, Active, Process Oriented Method

8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>The participants in a debate consist of three groups: The affirmative team which stands for the debate topic, the negative team which stands against the debate topic, and a group of audiences.</p> <p>Teachers may have to be the hosts of the debate, and ensure the debate is running at an appropriate pace. They also assess the performance of the students during the debate, and provide feedback to enhance their learning afterwards.</p> <p>Each debate team normally consists of 3 or 4 members, with the captain initiating the motions and presenting the summaries. The other team members will assist in the development of arguments, take notes on the opposing arguments delivered by the opposing team, and brainstorm ideas and questions for rebuttals as the debate proceeds.</p>								
9. EVIDENCE	<p>Links for videos, photos.</p>	<p>https://q16languagebhlmackay.files.wordpress.com/2015/10/screen-shot-2015-10-23-at-9-03-46.png</p> <p>http://kevinfitton.com/education/Debate%20in%20the%20Classroom.gif</p>								
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none">Quantitative and qualitative results in relation to the teaching goals.What is the users/target group’s opinion of the activity?	<p>Allow students to look at both sides of an issue; improve students' communication and expression skills in a public setting; enhance techniques of searching information, improve skills for gathering, evaluating and synthesizing data from various sources to develop arguments; foster appreciation of opposing viewpoints; enhance debating/arguing techniques against opposing opinions; allow more interactive exchange among students and teachers.</p>								
11. ASSESSMENT	<p>Suggested assessment method for the students</p>	<p>Set up rules for the debate. After the debate, ask students to write an essay to reflect their own opinions and the knowledge gained through the debate.</p> <table><tr><th>MARKING RUBRICS</th><th>Excellent</th><th>Proficient</th><th>Average</th></tr><tr><td>Preparation:</td><td>Prepared a very ..</td><td>Satisfactory ..</td><td>Demonstrated ..</td></tr></table>	MARKING RUBRICS	Excellent	Proficient	Average	Preparation:	Prepared a very ..	Satisfactory ..	Demonstrated ..
MARKING RUBRICS	Excellent	Proficient	Average							
Preparation:	Prepared a very ..	Satisfactory ..	Demonstrated ..							

		scope of information and deep, critical analysis of the given topic; information is collected from a wide range of sources and perspectives which effectively contribute to development of arguments	on of information and analysis for the given topic; major issues about the topic was well covered	on for the basic information of the given topic, but no evidence of analysis coming from the student was shown
	Organization and Presentation	Logical flow in the presentation of arguments; information organized in a coherent manner; powerful and persuasive presentation	Generally clear flow of arguments; presentation is persuasive but with minor problems	Able to give the basic framework of the presented ideas, but lack of persuasive power
	Use of Arguments	Plenty of very strong and	Many fairly strong arguments	Arguments are generally on the

			ve argumen ts	few are not persuasi ve	track but not convinci ng and strong enough
		Rebuttal	Excellen t defense and attack against the opposite side; able to identify the weaknes s of the opposite side	Satisfact ory defense and attack against the opposite side; attempte d to find out weaknes s of the opposite side	Fail to defense for some issues; a few successf ul attacks against the opposite side
12. FILE	UPLOAD A	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.		http://www.csun.edu/~ds56723/phil338/hout338rubric.htm http://ar.cetl.hku.hk/am_debate.htm#5 http://www.educationworld.com/a_lesson/lesson/lesson304b.shtml	

FIELD		PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT	
1.	TITLE	What is the name that best describes the good practice?	Discussion method in mathematics
2.	COUNTRY	In which country does the good practice take place?	Bulgaria
3.	LINK	Please give a web link for further information about the good practice.	www.ivanpivanov.com/uploads/sources/55_Inte_raktivni-metodi-za-obuchenie.pdf
4.	LANGUAGE	Language of the source.	Bulgarian language
5.	SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>The discussion method in teaching mathematics is a process of interaction controlled by the teacher, through which students acquire information and experience. It is an effective method that promotes student-centered learning than teaching. Students are able to actively participate in discussions, which enhance their understanding and capture their attention. The discussion method promotes democratic thinking among students. Students are able to freely share their ideas, speak their opinions and challenge each other to arrive at a common decision.</p> <p>Teamwork gives quality results, due to the use of knowledge and resourcefulness of many people.</p>
6.	RESOURCES	Required resources for effective application of the method.	No special resources are needed
7.	WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Stimulates the original thinking of students. • Provides an opportunity for each of the students to take part in the learning process. • Generate a quantity of ideas and opinions. • Allows everyone to convey their own point of view. • Emphasis on learning instead of teaching.

		<ul style="list-style-type: none"> • Develops democratic way of thinking. • Spirit of tolerance is inculcated.
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Discussion in the form of dialogue can be used to reinforce students' knowledge. In order to provide an opportunity for the students to assimilate something more than technical skills and contribute to their mathematical education teachers emphasize on establishing a warm, supportive environment that invites students to discuss willingly. Those tasks that begin with the question 'What do you think?' enable students to think mathematically and to assess situations from a mathematical point of view. During the process of discussion students are able to freely share their ideas, express their opinions, bring the relevant arguments and challenge each other to arrive at a common decision.</p>
9. EVIDENCE	Links for videos, photos.	No evidence photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> ▪ Students are being given an opportunity to expand their existing knowledge. ▪ Learning material that has already been known is clarified. ▪ Students are enabled to develop their abilities to think rationally. ▪ Learners gain experience to solve problems unaided. ▪ Students are empowered to express different opinions and bring the relevant arguments.
11. ASSESSMENT	Suggested assessment method for the students	Individual assessments are given to those students that have been actively involved in the discussion and been able to give reason for their standpoints.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	The Racing games feast of mathematics
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	www.math.bas.bg/...MITE2/Grozdev-Chehlarova-paper.pdf www.math.bas.bg/...tii/33-vazrajane-na-praznicite... www.researchgate.net/.../Sava_Grozdev/publication/...
4. LANGUAGE	Language of the source.	Bulgarian, English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	Celebrations of mathematics are useful for all students from the first to the last class of education, they leave a lasting impression in the mind. An important part of the celebration of mathematics are racing games. Participants broadcast three teams with three contestants. First played for team standings, then individual standings. Between stages have educational interesting facts and tasks for the audience.
6. RESOURCES	Required resources for effective application of the method.	<p>Prepared didactic software to celebration of mathematics -type presentation.</p> <p>Supplies for the competition – sheets, pens;</p> <p>Prizes for participants;</p> <p>Invitations for the guests;</p> <p>Logo for each participant and guest;</p> <p>Diplomas (I, II, III place for team and individual ranking);</p> <p>Decoration ;</p>
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<p>Participation in racing games on the celebration of mathematics contribute to:</p> <ul style="list-style-type: none"> • formation of skill orientation in time; • to improve the ability to plan and implement the plan; • for reflection and evaluation at your own opportunities, achievements and personality changes as a result of training.

		<ul style="list-style-type: none"> • improve is the ability to work in a team; • strong emotional impact and form a love to math;
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Preparation for the celebration:</p> <ul style="list-style-type: none"> • Selection of tasks for the contestants and the audience • Preparation of software product for the celebration; • Preparation of scenarios for the celebration • Development of a logo for each participant and guest • Purchase Awards, making diplomas, invitations to guests • Preparation of consumable for competition • Decorate the room <p>Conduct of the celebration: There are two presenters on the celebration. Acquaint participants and guests with the regulation of the competition . The competition is in three rounds. In the first round of all participants are broadcast three teams of three contestants. The second round is the team standings, and the third - for individual standings. In each round are solved three problems for time. Between each two rounds have interesting facts for the audience and tasks for the audience - so filled time in which contestants solve problems and the celebration has a learning function for the audience. After each round explains the decision of tasks. Commission examines the decisions and broadcast winners.</p>
9. EVIDENCE	Links for videos, photos.	No evidence photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<p>The competition is very emotional. Participants are always satisfied after its completion, also the audience and guests, since they were not just passive spectators but and participants. For contestants competition also has an educational and educative function.</p> <p>The limitation of time to solve problems is essential. This limitation requires and accordingly educate concentration in learning the task, in solving it, replying or refusal of it. Assist in the formation of the ability to make a decision. Educates responsibility - no time for</p>

		continuous verification of the correctness of the result reached. Time constraints contribute to the understanding of the need for knowledge of rational methods of work of more methods to solve problems, more knowledge. In some cases, intuition is crucial to reach an answer - and it is based on associations, analogies of preliminary accumulation of knowledge, skills, tactics and behavior.	
11.	ASSESSMENT	Suggested assessment method for the students	Competition, test
12.	UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Research approach to mathematics presented through presentations by students
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	http://conf.uni-ruse.bg/bg/docs/cp15/6.4/6.4-8.pdf
4. LANGUAGE	Language of the source.	Bulgarian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	Contemporary student should be provoked to expand their knowledge in mathematics, to seek additional information about the studied material. Preparing a presentation on a given topic stimulate thinking and creative activity. Students play the role of researchers. The presentation of presentation allows them to "enter" into the role of teacher, increases their confidence.
6. RESOURCES	Required resources for effective application of the method.	Laptop, projector, presentation.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> - Provoke interest of students; - Seek and receive new information; - Offers a variety; - Developing skills for independent work and teamwork;
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	In relation with the theme "Measuring units" the students have a task to explore the use of other measuring unit than those in the lesson. The task boost their interest. They presented reports and presentations.
9. EVIDENCE	Links for videos, photos.	No evidence photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. 	<ul style="list-style-type: none"> - Formed new attitude towards mathematics as a fun and interesting science; - Stimulate is research skills; - A new learning environment;

	<ul style="list-style-type: none"> What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> - Attracting the students' attention; - Students self-seeking sources of information;
11. ASSESSMENT	Suggested assessment method for the students	Individual assessments of performance, creativity and presentation presentations.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://drive.google.com/open?id=0B4ls-AtzeWJ9dnkyM2dYM3FkazA

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Method of Math Work Stations
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	diuu.bg/ispisanie/broi23/23dpp/23dpp2.pdf ; http://conf.uni-ruse.bg/bg/docs/cp/9/9-40.pdf
4. LANGUAGE	Language of the source.	Bulgarian language
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<ul style="list-style-type: none"> • There are diverse assignments with varying degrees of complexity on each of the stations. Tasks should be varied in type and form so as to different senses to be used. • Common theme of tasks. • Learning by doing is being emphasized. Students go through the stations and work on the tasks. • Stations can be operated individually, in partnership or in groups. • There has been a set time for passage through the stations. • Current control. • 'The Road' through the stations of every student is being noted in the so-called progress datasheet. • The materials wrought are being stored in an individual folder. • Evaluation of work done.
6. RESOURCES	Required resources for effective application of the method.	Worksheets with the corresponding tasks for each station, progress datasheet.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Through this working method the student is being given a chance to be an active side. • Teacher is being acted as a partner, consultant or advisor. • Deepening and generalization of

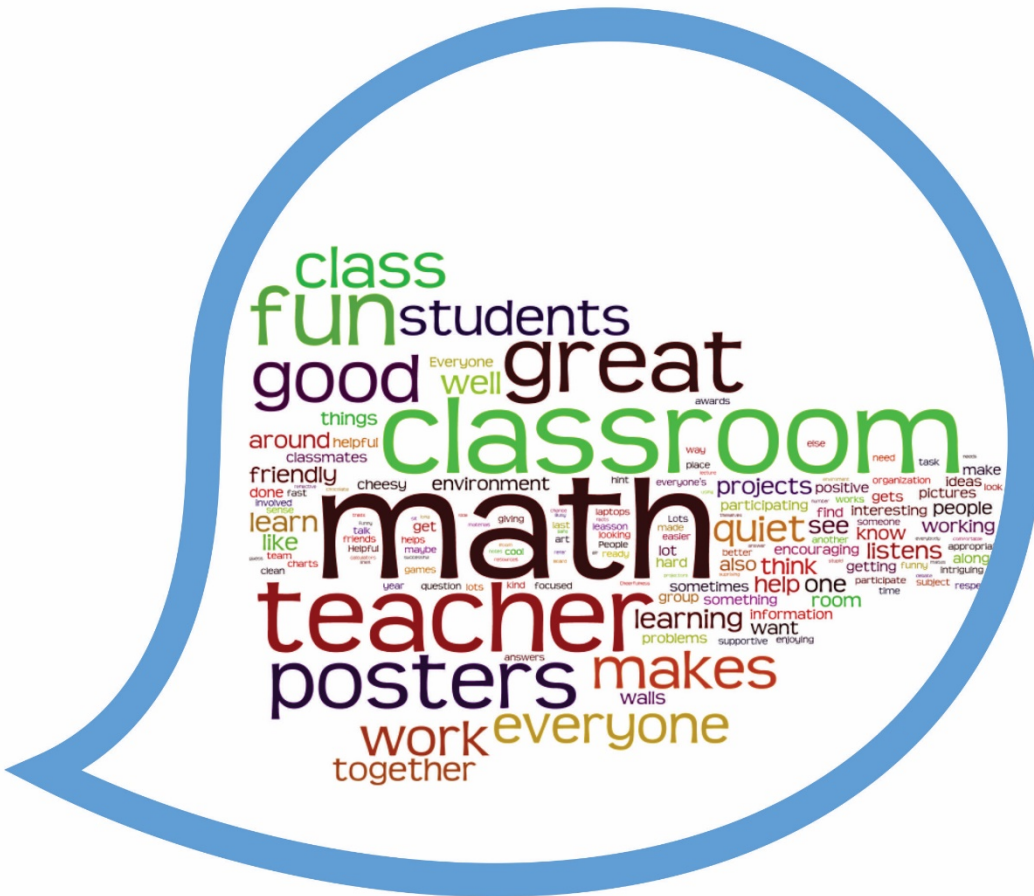
		<p>knowledge.</p> <ul style="list-style-type: none"> • Developing skills and self-control. • Developing Social Skills. • Suitable for interdisciplinary work. • Ability to individualization and differentiation of learning. • Mastering the ability to make decisions.
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<ul style="list-style-type: none"> • Promoting of individual work and training. • Teamwork. • Learning through communication. • Internal differentiation at choice. • Individual support at various levels of difficulty. • Encouraging poorer students through individual support. • Promoting talented with creative optional stations. • Increasing motivation.
9. EVIDENCE	<p>Links for videos, photos.</p>	No evidence photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<p>By using this method competences are being formed. It helps build basic knowledge and experience through action is being gained. It is expected to achieve the following:</p> <ul style="list-style-type: none"> • Coping with the tasks set and keeping the order of work. • Observing time regulated. • Interesting in the subject of work. • Good and detailed solution shaping. • Sharing lessons learned. • Presentation Skills. • Ability to make decisions. • Forming co-operative skills. • Conforming to different opinions.
11. ASSESSMENT	<p>Suggested assessment method for the students</p>	
12. UPLOAD A FILE	<p>Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.</p>	<p>https://drive.google.com/open?id=0B4ls-AtzeWJ9U2F0dE9meFJNYzA</p>

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Creative drama – drama +math=dramath
2. COUNTRY	In which country does the good practice take place?	Turkey, Greece
3. LINK	Please give a web link for further information about the good practice.	http://broadwayeducators.com/teaching-mathematics-in-the-classroom-through-theatre/
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>The drama is as empirical aspect of learning. The student may learn from what they are doing in drama.</p> <p>Drama is a performing art, an outlet for self-expression, and a way of learning. Drama is an effective learning tool because it involves the student intellectually, physically, socially, and emotionally. Activities in improvisation, pantomime, play-making, and scene reenactment serve to develop the creative potential in the participants and help to develop critical thinking skills.</p>
6. RESOURCES	Required resources for effective application of the method.	<p>https://pdfs.semanticscholar.org/1a92/264a18d1dae1664b834d59ba2661bd5a307f.pdf</p> <p>file:///C:/Users/user/Downloads/ENHANCING_INNOVATIVE_PRACTICES_IN_MATHEM.pdf</p>
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<p>Creative drama method has been used to enable the person to be active, to learn by realizing, makes him a productive and creative person and also it helps the person to improve healthy social communication skills</p> <p>The benefits of using creative drama as a teaching methodology coincide with the established goals of education. These include:</p> <ul style="list-style-type: none"> developing the imagination and creativity fostering critical thinking and problem-solving skills exploring and evaluating ideas discovering positive ways of dealing with

		<p>conflict</p> <p>expressing feelings and interpreting the feelings of others</p> <p>enhancing communication skills</p> <p>improving literacy skills</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>In the introduction part, to lead everyone goes in a relaxed mood, ready to work together in a harmony, trust each other and also have fun, warm-up activities were used. These activities also gave students some hidden clues about the rest of the lesson.</p> <p>In the development part, dramatic moments were introduced in which students faced with the tension of time, an obstacle to overcome, mission to accomplish, or status to challenge. These tensions forced them to remove the obstacle, or accomplish the mission in given time. In order to get rid of these tensions, they had to create some ideas, discuss their ideas with their friends. In some lessons, the teacher participated in the activities by taking some roles in them. This helped the teacher to control the students, and the teaching/learning process. It also provides more effective relationships between the teacher and students.</p> <p>Finally, in quieting part, the key points of the concept covered summarized either by the teacher or by the students. Students reviewed what they have learned either by answering or solving the questions posed by the teacher, or presenting what they have learned by creating a scenario that requires the use of knowledge learned.</p>
9. EVIDENCE	Links for videos, photos.	No evidence photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>Creative drama offers children the chance to explore themselves through the lives of fictional "others" in a safe space that enables mistakes to be made and learned from (Jindal-Sanpe et. al., 2011). Creative drama provide collaborative learning and learning by discover. Therefore, mathematics and creative drama is learned through exploring.</p> <p>Participation in drama activities provides the teacher with another way to assess the student.</p>

		<p>Through dramatic play, students reveal how they organize ideas, solve problems, work in a group, deal with conflict, and use their imagination. Observing how students dramatize an event offers valuable insight into how they perceive, interpret, understand, and analyse the material at the core of the lesson.</p> <p>Drama is a teaching tool that allows students to participate, demonstrate, and observe in a "controlled," or non-threatening, environment. In other words, it provides another "non-traditional" opportunity for students to learn and to demonstrate learning. At the same time, drama helps students get in touch with their creativity and spontaneity as well as to develop confidence in the expression of their ideas. Finally, it teaches self-discipline, acceptance of and positive response to criticism, and cooperation with others.</p>
11. ASSESMENT	Suggested assessment method for the students	/
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

PART 3: INTEGRATED CLASSROOM



MATH Debate

INTEGRATED CLASSROOM

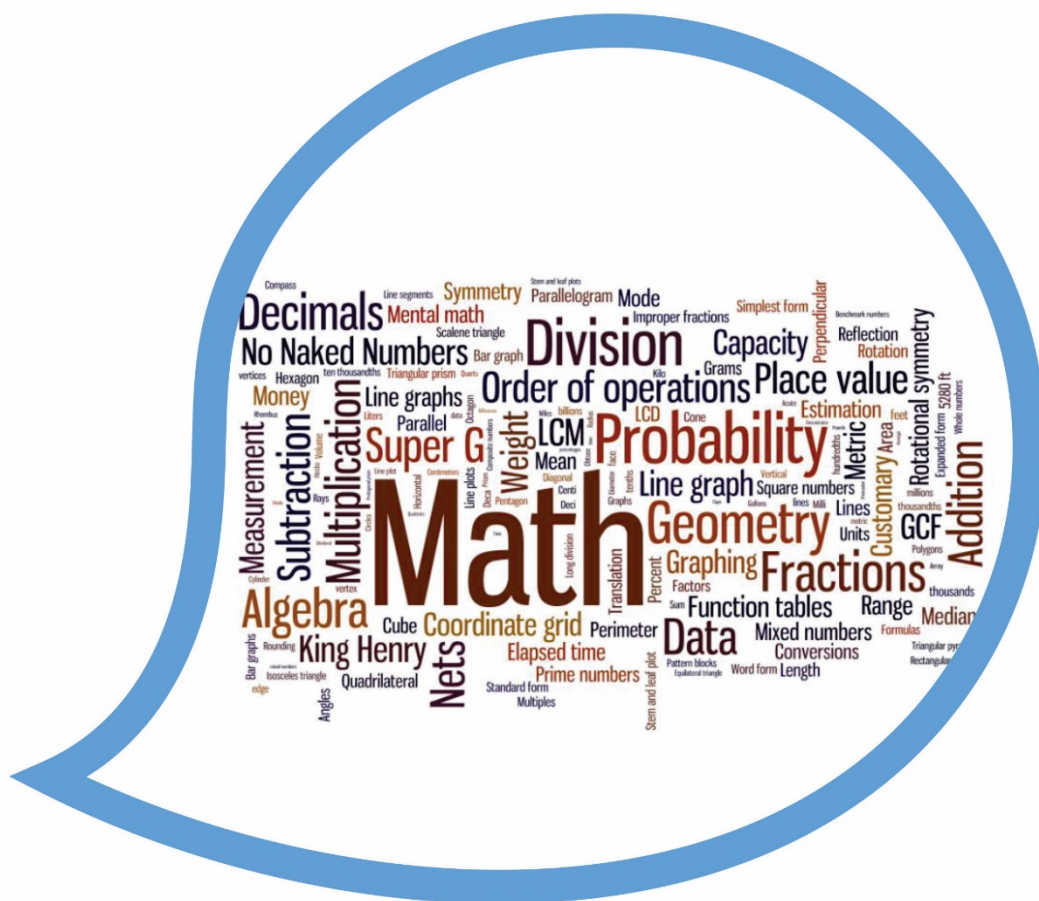
FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Geometry and fashion design
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	http://www.fashion-lifestyle.bg/textiles_broi68
4. LANGUAGE	Language of the source.	Bulgarian language
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>Teachers are often asked the following question by their students, 'Where shall we need knowledge learned in mathematics?'</p> <p>To convince students that life is math and something else we can put them in certain life situations. When generalized students' knowledge about geometric shapes through practical work 'Geometry and Fashion Design' students can make clothing models.</p>
6. RESOURCES	Required resources for effective application of the method.	A sketchpad, colored pencils.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Provoking students' interest. • Pupils find out themselves an answer of the question 'Why do we need mathematics?' • Developing creative imagination. • Educating sense of aesthetics.
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Preparatory part</p> <p>Students are assigned a task to investigate the application of</p> <p>geometric figures in contemporary fashion</p>

		<p>trends.</p> <p>Working part</p> <p>Create a lady's toilet that meets the following requirements:</p> <ul style="list-style-type: none"> • be made of triangles only; • be made of quadrangles only; • be made of triangles and quadrangles. <p>Having had models prepared students answer the question, 'In which of the cases the least fabric is needed?'.</p>
9. EVIDENCE	Links for videos, photos.	https://drive.google.com/open?id=0B4ls-AtzeWJ9OW5xd3lsS1VNdkk
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> • Establishing connections between mathematics and everyday life. • Students' attention is being riveted. • Students are being given an opportunity for personal involvement. • Students that have difficulties in learning new material are enabled to show themselves. • Students are promoted to use their own ideas and practical skills. • Students feel more motivated to learn and work.
11. ASSESSMENT	Suggested assessment method for the students	Assessing creativity and aesthetic presentation.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Geometry and Bulgarian folklore
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	https://sites.google.com/site/knigadete/matematicski-folklor
4. LANGUAGE	Language of the source.	Bulgarian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	When we say mathematics and Bulgarian folklore always remember those fun tasks fruit of our mercurial Bulgarian people. This practice is considered another application of geometry in our folklore and traditions. How do students with the help of geometry can create notorious Bulgarian martenitsi / white and red / dedicated on March 1, devise using symmetry beautiful Bulgarian embroidery so characteristic of our costumes.
6. RESOURCES	Required resources for effective application of the method.	Colored paper, scissors, glue, sketchbook, colored pencils and markers.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> - Provoke interest of students; - Develop creative imagination; - Place the application of mathematics to another in a different light; - Find participation in mathematics defined various fields;
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>1 / Preparatory part;</p> <p>6-grade students is on assignment to develop traditional Bulgarian martenitsi using only geometric shapes triangle, rectangle, circle and its parts.</p> <p>Grade 8-With a central axial symmetry, rotation and translation to draw samples of Bulgarian embroidery.</p> <p>working part</p> <p>6kl.-Create martenitsa that meets the following requirements:</p> <p>-to only of triangles and quadrangles</p>

		-to only of circles and its parts 8kl.- Create Bulgarian embroidery that meets the following requirements: -to is composed of a symmetry -to a set of several symmetries
9. EVIDENCE	Links for videos, photos.	https://drive.google.com/open?id=0B4ls-AtzeWJ9cTJuNTdoV0tWYms https://drive.google.com/open?id=0B4ls-AtzeWJ9THFtaFdPUV91Vm8 https://drive.google.com/open?id=0B4ls-AtzeWJ9c0ZXWG93dXpvM1E https://drive.google.com/open?id=0B4ls-AtzeWJ9Z0VvOU9nUUw3Q3c https://drive.google.com/open?id=0B4ls-AtzeWJ9a2dsVzNmV3Zuelk https://drive.google.com/open?id=0B4ls-AtzeWJ9TIJWNII0TihYOEK https://drive.google.com/open?id=0B4ls-AtzeWJ9Y0c5dTFPNnVtWms
10. RESULTS	Max 75-100 words. <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	Development of martenitsas embroideries and develop creative attitude in mathematics. Acquaint them with some of the traditions of the Bulgarian people. Serve to develop a number of important qualities of logical and creative thinking of students, as they are in the role of artists and designers. It allows for use of own practical skills. Possibility of personal involvement and expression of students, which is more difficult to deal with mastering the material.
11. ASSESSMENT	Suggested assessment method for the students	Individual assessment: -Create original designs. - Artistic and aesthetic craftsmanship. - Precise execution.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

PART 4: MATH AND DATA ANALYSIS



MATH Debate

MATH AND DATA ANALYSIS

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Data Simulations
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	http://static.clexchange.org/ftp/documents/implementation/IM1996-01EffectiveUseOfSims.pdf
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	Teaching with data simulations means giving students opportunities to simulate data in order to answer a particular research question or solve a statistical problem. There are several ways to use simulations: physical simulations of a process, using probability models to simulate data to estimate the chance of a particular outcome, or simulating data while varying parameters to illustrate a concept or deepen students' understanding of a process. Another use of simulation is to generate data under a certain theory to test whether a particular outcome is surprising.
6. RESOURCES	Required resources for effective application of the method.	Computer
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Simulation is an important tool used by statisticians to solve problems, so students need to learn how to use simulation as a statistical problem-solving tool. • Simulating data can help students visualize and build a deep understanding of difficult and abstract statistical concepts, and to see dynamic processes, rather than static figures and illustrations. • Simulations provide students a way to informally address questions involving statistical inference, before formally studying this topic later in a class. • Simulations provide a way to actively engage students in making and testing conjectures about data, developing their reasoning about statistical concepts and procedures.

8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>How simulations are used is of great importance. Simulations can involve physical materials (drawing items from a bag, tossing coins, sampling candies) or involve generating data on the computer (drawing samples from a population or generating data based on a probability model). Even when using computer simulations, always begin with a concrete simulation (e.g., having students take random samples of words from the Gettysburg address before taking simulated samples using their Sampling Words applet).</p>
9. EVIDENCE	<p>Links for videos, photos.</p>	<p>http://serc.carleton.edu/sp/library/datasim/examples.html</p>
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<p>/</p>
11. ASSESSMENT	<p>Suggested assessment method for the students</p>	<p>/</p>
12. UPLOAD A FILE	<p>Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.</p>	<p>http://serc.carleton.edu/sp/library/datasim/examples.html</p>

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Didactic games in mathematics
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	www.math.bas.bg/smb/2010_PK/tom/pdf/340-346.pdf priobshti.se/.../izpolzvane-na-didakticheski-igri...
4. LANGUAGE	Language of the source.	Bulgarian language
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>Didactic game in mathematics education is viewed as a powerful means of stimulating active cognitive activities in students; increase their interest in mathematics and leads to easier absorption of learning content.</p> <p>Didactic game plays a crucial role in enhancing the activity of students in the learning process, helps to facilitate absorption of educational content, urges on active cognitive activity greater number of students and increases their interest.</p> <p>Actual pedagogy game is complicated, but simultaneously it is an opportunity for harmonious and spontaneous communication between students and teachers. Throughout the game the students concentrate and mobilize themselves and are able to make great efforts to achieve the goal of the game.</p>
6. RESOURCES	Required resources for effective application of the method.	No special resources are needed
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	During the game participants acquire skills and habits of concentration and independent thinking; they develop their attention and pursuit of knowledge; They do not notice that they learn to recognize and remember new or assimilate and apply the acquired knowledge; orient themselves in photographic situations by completing the stock of ideas and concepts;

		<p>develop certain habits and imagination. Even the usually passive students in class in mathematics include willingly make efforts not to mislead their peers throughout the game. So didactic game becomes a transformative creative activity located in close cooperation with other types of academic work.</p>
<p>8. HOW DOES IT WORK?</p>	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Orientation: The teacher defines the theme, makes a characteristic of the game and an overview of its moves and rules.</p> <p>Preparations for holding the game: Getting to know with the script, assignment of roles, preparing for their performance, providing procedures for the management of the game.</p> <p>Conducting the game: The teacher monitors the conducting of the game, controls the sequence of the participants' actions, provide the necessary support, reports the results.</p> <p>Discussion of the game:</p> <p>Implemented actions, positive and negative sides during the game, as well as the arisen difficulties are being analyzed; possible ways of the game realization including possible amendments to the rules are also being discussed.</p> <p>A significant part of the didactic games are gaming actions that regulate the rules of the game, stimulate cognitive activities of participants, provide an opportunity to demonstrate their ability to transform knowledge, skills and habits to achieve the objectives of the game.</p> <p>Cognitive content is the basis of didactic game and lies in the utilization of those skills and knowledge that apply in solving educational problems embedded in game. Didactic game has a certain game result which is the end the game and gives its completeness. It occurs primarily in the form of solution to the academic task and brings the student satisfaction.</p>
<p>9. EVIDENCE</p>	<p>Links for videos, photos.</p>	<p>No evidence photos</p>
<p>10. RESULTS</p>	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and 	<p>By playing children mastered the rules of intellectual and practical activities in accessible</p>

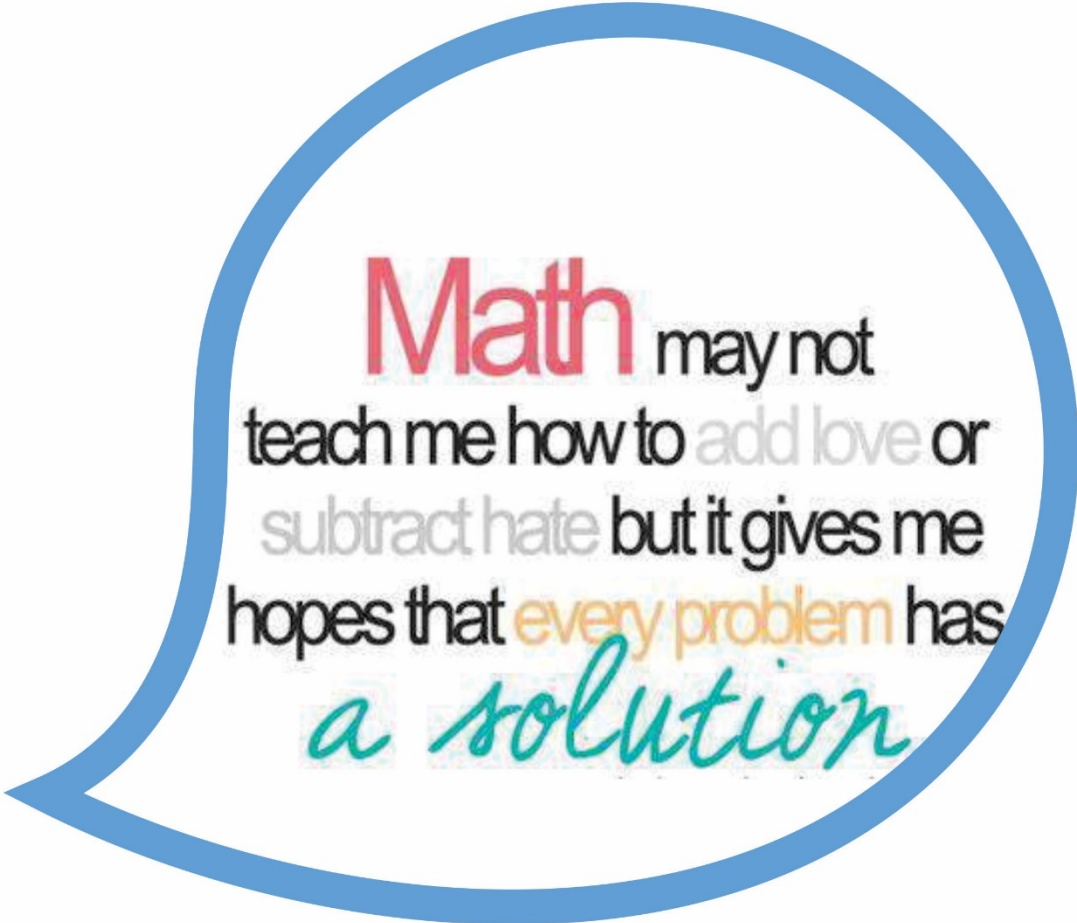
	<p>qualitative results in relation to the teaching goals.</p> <ul style="list-style-type: none"> What is the users/target group's opinion of the activity? 	<p>formats. Intellectual game is an effective form of conducting lessons in mathematics as the knowledge acquired with interest are the soundest. Students take up the game and not pay attention to the fact that in the process of playing they have to solve serious tasks.</p> <p>The use of didactic games in teaching mathematics enables students to develop, refine and consolidate their observation, to form team working skills, teaches them to listen and respect other opinions, to develop their creative abilities. Children are much more free, responsible, creative, active and independent. The game helps to create and maintain a benevolent, positive psychological climate in the students' team.</p>
11. ASSESSMENT	Suggested assessment method for the students	Competition, game
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Survey method
2. COUNTRY	In which country does the good practice take place?	Macedonia
3. LINK	Please give a web link for further information about the good practice.	http://www.nctm.org/Publications/Mathematics-Teacher/2015/Vol109/Issue5/Engaging-Students-in-Survey-Design-and-Data-Collection/#THELESSON'SGOALSANDIMPACT
4. LANGUAGE	Language of the source.	Macedonian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>A survey is a method of collecting information. It may collect information about a population's characteristics, self-reported and observed behaviour, awareness of programs, attitudes or opinions, and needs. Repeating surveys at regular intervals can assist in the measurement of changes over time. Information collected using surveys is invaluable in planning and evaluating policies and programs.</p> <p>Information is collected from a group of people in order to describe some aspects or characteristics of the population of which that group is a part.</p> <p>The main way in which the information is collected is through asking questions by the members of the group constitute the data of the study.</p> <p>Information is collected from a sample rather than from every member of the population.</p>
6. RESOURCES	Required resources for effective application of the method.	Survey, worksheets, computer
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<p>Students were enthusiastic and highly motivated</p> <p>Enables strengthening their ability to write and implement well-designed surveys and also helps students to increase their critical thinking</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>STEP 1: DEFINING THE PROBLEM</p> <p>The problem to be investigated by means of Survey should be:</p> <ul style="list-style-type: none"> - Sufficiently interesting

		<p>- Important</p> <p>Strategy for defining survey question:</p> <p>- Hierarchical Approach</p> <p>STEP 2: IDENTIFYING THE TARGET POPULATION</p> <p>Unit of Analysis</p> <ul style="list-style-type: none"> - Is the major entity that is being analyzed in a study? - It is the “what” or “who” that is being studied - It includes individuals, groups, social organizations and social artifacts. <p>Target Population</p> <p>- The group of persons (objects, institutions and so on) that is being studied.</p> <p>STEP 3: CHOOSING THE MODE OF THE COLLECTION</p> <p>Direct Administration to a Group</p> <p>Mail Surveys</p> <p>Telephone Surveys</p> <p>Personal Interviews</p> <p>STEP 4: SELECTING THE SAMPLE</p> <ul style="list-style-type: none"> - The subject of the survey should be selected from the population. - the subjects they intend to question possess the desired information - Individuals who possess the necessary information but who are uninterested in the topic of the survey (or who do not see as important) are unlikely to respondents. - conduct a preliminary inquiry among potential respondents <p>STEP 5: PREPARING THE INSTRUMENT</p>
9. EVIDENCE	Links for videos, photos.	No evidence photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group’s opinion of the activity? 	<p>This lesson gave students the opportunity to see that surveys can be powerful tools when they are well designed and implemented. Students were enthusiastic and highly motivated to examine their own behaviour behind the wheel by analysing data they had generated. They came to appreciate that the results from surveys can be unintentionally misleading or purposefully deceptive. They also realized that</p>

		the strength of the evidence used to answer a question depends on the quality of the data collected. This exploration strengthened their ability to write and implement well-designed surveys and also led to a welcome bit of scepticism and critical thinking when reading the results of surveys. For students, this was a valuable mathematics lesson and a potentially life-saving experience.
11. ASSESSMENT	Suggested assessment method for the students	populacija-primerok-co%20ИКТ%20и%20истражување.doc#Prilog2
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	populacija-primerok-co ИКТ и истражување.doc Data-Collection-Lesson-Plan.docx Data-Collection-Lesson.pptx Data-Collection-Worksheet.docx

PART 5: REAL LIFE PROBLEMS



Math may not
teach me how to add love or
subtract hate but it gives me
hopes that every problem has
a solution

MATH Debate

REAL LIFE PROBLEMS

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Problem solving
2. COUNTRY	In which country does the good practice take place?	/
3. LINK	Please give a web link for further information about the good practice.	http://www.free-management-ebooks.com/news/six-step-problem-solving-model/
4. LANGUAGE	Language of the source.	English, Macedonian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>Problem solving models are used to address the many challenges that arise in the workplace. While many people regularly solve problems, there are a range of different approaches that can be used to find a solution.</p> <p>Complex challenges for teams, working groups and boards etc., are usually solved more quickly by using a shared, collaborative, and systematic approach to problem solving.</p>
6. RESOURCES	Required resources for effective application of the method.	The group may use tools, such as a Gantt chart, timeline or log frame. Between Steps Five and during Step Six the operational/technical implementation of the chosen solution takes place.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<p>The Six Step Problem Solving Model provides a shared, collaborative, and systematic approach to problem solving.</p> <p><input type="checkbox"/> Each step must be completed before moving on to the next step. However, the steps are repeatable. At any point, the group can return to an earlier step, and proceed from there.</p> <p><input type="checkbox"/> The goal is not to solve but to evolve, adjusting the solution continually as new challenges emerge, through repeating the Six Step Process.</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p><input type="checkbox"/> Step 1) Define the Problem – Identify problems through problem formulation and questioning. The key is asking the right questions to discover root causes.</p>

		<ul style="list-style-type: none"> □ Step 2) Determine the Root Cause – During this process, assumptions are uncovered and underlying problems are further revealed. Also, this is an opportunity to collect and analyze data. □ Step 3) Develop Alternative Solutions – Decisions are made within the group to determine the appropriate solution and process through creative selection. □ Step 4) Select a Solution – Once the group has formed solutions and alternatives to the problem(s), they need to explore the pros and cons of each option through forecasting consequences. □ Step 5) Implement the Solution – Develop an action plan to implement and execute the solution process. □ Step 6) Evaluate the Outcome – This final stage requires an evaluation of the outcomes and results of the solution process. Ask questions such as: Did the option answer the questions we were working on? Did this process address the findings that came out of the assumptions?
9. EVIDENCE	Links for videos, photos.	Problemska%20zadaca.doc#Sliki
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> ▪ Problem solving method can be an effective method for teaching mathematics in the hands of an able and resourceful teacher of mathematics. ▪ Mathematics classrooms must be challenging and engaging environments for all students, where students learn significant mathematics. ▪ Students are called to engage in solving rich and relevant problems. These problems offer several entry points so that all students can achieve, given sufficient time and support. ▪ Lessons are structured to build on students' prior knowledge ▪ Students develop their own varied solutions to problems and thus develop a deeper understanding of the mathematics involved. ▪ Students consolidate their knowledge through shared and independent practice.

		<ul style="list-style-type: none"> Teachers select and/or organize students' solutions for sharing to highlight the mathematics learning (e.g., bansho, gallery walk, math congress).
11. ASSESSMENT	Suggested assessment method for the students	Problemska%20zadaca.doc#Prilog
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	Problemska zadaca.doc

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Math-lab approach
2. COUNTRY	In which country does the good practice take place?	Macedonia
3. LINK	Please give a web link for further information about the good practice.	https://repository.nie.edu.sg/bitstream/10497/2410/1/TL-5-1-19.pdf http://teachingasleadership.org/sites/default/files/Related-Readings/IPD_Ch6_2011.pdf
4. LANGUAGE	Language of the source.	English, Macedonian
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	The Mathematics Laboratory Approach is a method of teaching whereby children in small groups work through an assignment/task card, learn and discover mathematics for themselves. The children work in an informal manner, move around, discuss and choose their materials and method of attacking a problem, assignment or task
6. RESOURCES	Required resources for effective application of the method.	Cards, board, computer etc.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<p>The method is based on the principle of learning by doing.</p> <p>This method is psychological as we proceed from known to unknown.</p> <p>It is based on the student's self-pacing.</p> <p>It helps in making clear certain fundamental concepts, ideas etc.</p> <p>It develops the self-confidence and teaches the students the dignity of labor.</p> <p>The children learn the use of different equipment's, which are used in laboratory.</p> <p>It develops in the child a habit of scientific, enquiry and investigation.</p> <p>This method presents mathematics as a practical subject.</p> <p>It stimulates the interest of the students to work with concrete material.</p> <p>It provides opportunities for social interaction and co-operation among the students.</p> <p>It is child-centered and therefore it is a psychological method.</p> <p>It helps the students to actively participate in the learning process and therefore the learning</p>

		becomes more meaningful and interesting.
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Procedure:</p> <p>Aim of The Practical Work: The teacher clearly states the aim of the practical work or experiment to be carried out by the students.</p> <p>Provided materials and instruments: The students are provided with the necessary materials and instruments.</p> <p>Provide clear instructions: Provide clear instructions as to the procedure of the experiment.</p> <p>Carry out the experiment: The students carry out the experiment.</p> <p>draw the conclusions: The students are required to draw the conclusions as per the aim of the experiment.</p>
9. EVIDENCE	Links for videos, photos.	Plostina%20na%20topka.docx#Photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>This method is based on the maxim "learning by doing."</p> <p>This is an activity method and it leads the students to discover mathematics facts.</p> <p>In it we proceed from concrete to abstract.</p> <p>Laboratory method is a procedure for stimulating the activities of the students and to encourage them to make discoveries.</p> <p>This method needs a laboratory in which equipment and other useful teaching aids related to mathematics are available.</p> <p>For example, equipment related to geometry, mensuration, mathematical model, chart, balance, various figures and shapes made up of wood or hardboards, graph paper etc.</p>
11. ASSESSMENT	Suggested assessment method for the students	instructional paper with a checklist for evaluating Plostina%20na%20topka.docx#Ocenuvanje
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	Plostina na topka.docx MATH-LAB.docx

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Motivational tasks / entertaining tasks and games
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	https://www.researchgate.net/publication/293483022_MOTIVACIONNITE_ZADACI_V_OBUCE_NIETO_PO_MATEMATIKA
4. LANGUAGE	Language of the source.	Bulgarian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>Mathematics education is impossible without solving problems attend in each lesson, they are a means to achieve the training aims. Motivational tasks must be the starting point of each phase of training .They should be challenging, emotional, related to real life, to bring awareness training and prerequisites for sustainable utilization of mathematical knowledge. There are three main groups - historical tasks; tasks with errors; entertaining tasks and games; tasks with theoretical possible solution, but not practicable; practical and daily life tasks of students. In this practice will look entertaining tasks and games.</p>
6. RESOURCES	Required resources for effective application of the method.	handbook - Mathematical folklore; various publications on the Internet
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<p>-entertaining tasks and games allow students in the learning process to discover for yourself some or other mathematical facts;</p> <p>- incite them to thinking;</p> <p>- striving to broaden and deepen their knowledge;</p> <p>- improve the skills</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Sample tasks that are suitable for students from 5th to 7th grade:</p> <p>1. Guessing age and number of the building where you live - write the number of the building where you live on a sheet. Multiply it by 2 and add 5 to the result. The resulting number multiply by 50 and add it to 365. To the last result add your age and say the resulting number. From the resulting number subtract</p>

		<p>615. The first two numbers that you received are numbers of the building where you live and the latter two are your age.</p> <p>2. Diophant spent $\frac{1}{6}$ of his life in childhood; $\frac{1}{12}$ in adolescence; after the seventh part spent in childless wedlock and yet five years, he had a son who died half years from his father, then Diophant lived another four years.</p> <p>3. Find a two digit number having properties: the number of tens is less with 4 than the number of units. If the number written with the same numbers but in reverse order subtract the given number is obtained 27.</p>
9. EVIDENCE	Links for videos, photos.	No evidence photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>Entertaining tasks and games provoke in students:</p> <ul style="list-style-type: none"> Anticipation and anxiety, joy of learning mathematics; Awaken and develop sustainable interest among students towards learning mathematics and its application; Awaken students to independent, search, creative work; Expand and deepen perceptions of students about cultural and historical value of mathematics;
11. ASSESSMENT	Suggested assessment method for the students	<p>individual assessment;</p> <ul style="list-style-type: none"> for speed for resourcefulness for wit for original solution
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
6. TITLE	What is the name that best describes the good practice?	Motivational problems in math education
7. COUNTRY	In which country does the good practice take place?	Bulgaria
8. LINK	Please give a web link for further information about the good practice.	https://www.researchgate.net/publication/293483022_MOTIVACIONNITE_ZADACI_V_OBUCENIETO_PO_MATEMATIKA
9. LANGUAGE	Language of the source.	Bulgarian
10. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	Motivational tasks must be the starting point of each phase of training. They should be challenging, emotional and connected to real life. Motivational tasks imported into mathematics education awareness and create significant preconditions for sustainable utilization of mathematical knowledge. These tasks allow students in the learning process to discover for yourself or some other mathematical facts, incite them to think over the questions, made over all striving to broaden and deepen the knowledge to skills development.
11. RESOURCES	Required resources for effective application of the method.	handbook - Mathematical folklore; various publications on the Internet
12. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> - Incite and develop sustainable interest among learners to learning mathematics and its application; - Incite students to self-seeking, a creative work; - Show the learner practical significance of the subject; - Show students the reasons for the emergence of one or another theory; - Expand and deepen introduce learners to the cultural and historical value of mathematics.
13. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions</p>	<p>Groups tasks that contribute to the formation of motivation for learning in students:</p> <p>First group: Historic tasks</p>

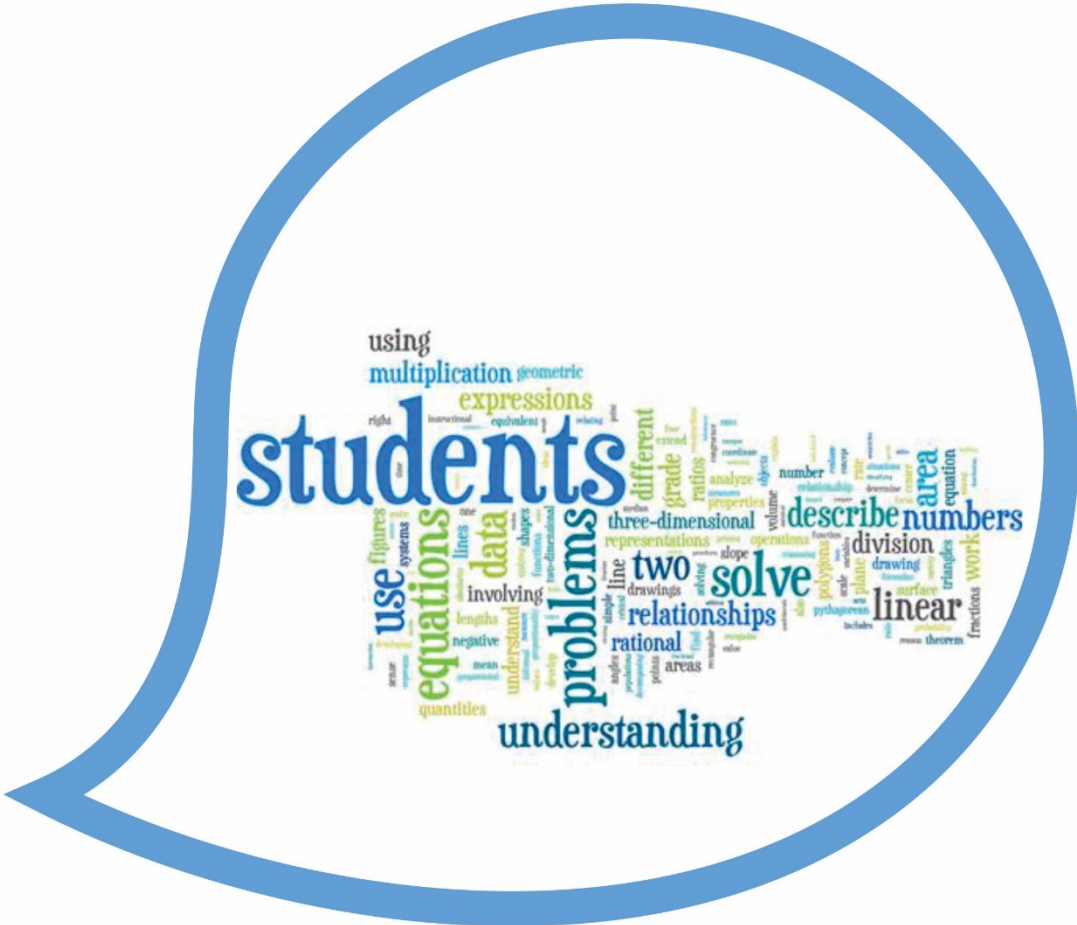
	does the practice involve?	<p>These are such tasks, most of which are composed by famous mathematicians in the past or reach us via mathematical folklore.</p> <p>Second group: Tasks with errors A) mistakes made by students want errors to be detected by other students in the class -these errors are for others in the class and they are result of incorrect analogies. B) errors committed intentionally by the teacher C) sophisticate, paradoxes.</p> <p>Sophisticate and paradoxes help correct consciously and thorough utilization of knowledge in mathematics. Here we must pay attention to the students not only learned what state regulations, but also on those things that are not true and mainly why not true. It is better to understand how a mistake can lead them ignoring a rule.</p> <p>Third group: Fun tasks and games These are such tasks carried away students to actively participate in math. Fourth group: Tasks of practice and everyday life.</p>
14. EVIDENCE	Links for videos, photos.	No evidence
15. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>Entertaining tasks and games provoke in students:</p> <ul style="list-style-type: none"> - Anticipation and anxiety, joy of learning mathematics; - Awaken and develop sustainable interest among students towards learning mathematics and its application; - Awaken students to independent, search, creative work; - Expand and deepen perceptions of students about cultural and historical value of mathematics.
16. ASSESSMENT	Suggested assessment method for the students	<p>individual assessment;</p> <ul style="list-style-type: none"> - for speed

		-for resourcefulness - for wit - for original solution
17. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://drive.google.com/open?id=0B4ls-AtzeWJ9ZmdSV2N6VnRnSIU https://drive.google.com/open?id=0B4ls-AtzeWJ9UEo5SU1aVEs2bIU

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Maths problems with practical application
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	http://sbornik.biz/class5.php?tag=%D0%97%D0%B0%D0%B4%D0%B0%D1%87%D0%B8%20%D1%81%20%D0%BF%D1%80%D0%B0%D0%BA%D1%82%D0%B8%D1%87%D0%B5%D1%81%D0%BA%D0%BE%20%D0%BF%D1%80%D0%B8%D0%BB%D0%BE%D0%B6%D0%B5%D0%BD%D0%B8%D0%B5 http://sbornik.biz/class6.php
4. LANGUAGE	Language of the source.	Bulgarian language
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>Solving problems with practical applications convince students that mathematics taught in school is closely related to the real world. Mathematics is a science that requires not only learning rules, but their application in real-life situations. Finance, science, technology, construction, trade, lifestyle - mathematics helps students daily to feel themselves knowledgeable and helpful.</p>
6. RESOURCES	Required resources for effective application of the method.	-
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<p>Students are able to:</p> <ul style="list-style-type: none"> • Recognize the role of mathematics in the world around us • Work with real-life data; • Comprehend the text, translate it into the language of mathematics.
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice</p>	<p>Tasks with practical application reinforce students' knowledge on a given subject, offering problem solving, which in turn orient students in the relationship between objects. The plot of</p>

	involve?	<p>these tasks can be from various fields of human knowledge and practice. Students learn to show abilities, effective use of mathematical knowledge to deal with specific situations.</p> <p>What is required to solve the tasks is as follows:</p> <ul style="list-style-type: none"> • Text comprehension; • Hypotheses formulation; • Modeling skills.
9. EVIDENCE	Links for videos, photos.	-
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> ▪ Awareness of the fact that mathematics is all around us; ▪ A set of cognitive and practical skills; ▪ Acquiring experience for solving problems in certain life situations; ▪ Developing thinking and reinforcing knowledge; ▪ Acquiring certain natural science or technical knowledge; ▪ Finding out connections between theory and practical activities of human life; ▪ Provoking interest in certain mathematics knowledge and skills; ▪ Being aware of the meaning of math study material;
11. ASSESSMENT	Suggested assessment method for the students	-
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	-

PART 6: SPECIFIC CASE STUDY



MATH Debate

SPECIFIC CASE STUDY

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	The Portfolio
2. COUNTRY	In which country does the good practice take place?	Romania
3. LINK	Please give a web link for further information about the good practice.	https://www.ericdigests.org/2000-2/portfolio.htm
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>Includes representative materials of what a person has worked during a period of time. May contain written solving of some work tasks, notes, learning diaries, tests, homework, extra problems solved, biographies of mathematicians previously studied. Ideally, the portfolio contains things that demonstrate student's progress in learning mathematics.</p> <p>Pupils must be given clear instructions about what the portfolio should contain and the evaluation criteria of portfolios must be known by the students.</p> <p>The student is free to include in the portfolio material that he considers necessary. Some elements of the portfolio are assessed separately.</p>
6. RESOURCES	Required resources for effective application of the method.	Files
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	Integrated approach to learning and the use of alternative valuation methods stimulate the creation of a relationship of collaboration, trust and mutual respect between teacher and students and between students. The student doesn't feel controlled, but supported. The teacher must be more an organizer of learning situations and a linking element between the student and the society, which mediates and facilitates access to information.

8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Task:</p> <p>Store in a file all written math materials - notes, homework, tests, extra solved problems, biographies of mathematicians previously studied.</p> <p>The portfolio must contain at least the following parts:</p> <ul style="list-style-type: none"> - A title sheet - contents - At least a written sheet (essay, describing steps in solving a problem, etc.) - Some math homework, to demonstrate understanding the math process - All written material produced during and for math lessons (other than the homework) - At least two tests demonstrating suggestive progress. - An essay conclusively linked to your experience at math.
9. EVIDENCE	Links for videos, photos.	No evidence photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> - promotes the overall development of personality by harnessing acquisition in different subjects by integrating knowledge, capabilities, skills and attitudes. - Stimulates the responsibility of the student by giving them the freedom of selecting the themes and the solving options - Assesses students' learning - Focuses on the identification / formulation of problems and then on solving them. - Engages students in real-life situations; has practical, social and economic significance and implications in moral education. - Encourages self-thinking rather than memorization or recognition of information. - Is interactive, engages students in understanding the evaluation process
11. ASSESSMENT	Suggested assessment method for the students	/
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	INSERT (Interactive Noting System for Effective Reading and Thinking) method
2. COUNTRY	In which country does the good practice take place?	/
3. LINK	Please give a web link for further information about the good practice.	faculty.tamuc.edu/jthompson/Resources/INSERT.doc
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>- uses a text encoding way that allows learners to read and understand actively and pragmatically a certain content</p> <p>- Used in the learning stage, as students' prior knowledge, evidenced by evoking specific activities, are used as basis for reading / listening the text.</p>
6. RESOURCES	Required resources for effective application of the method.	Book, board, worksheets
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<p>- develops vocabulary and ability to express and use mathematical language</p> <p>- own model of understanding and processing of a mathematical text is highlighted</p> <p>- students are faced with making connections between information, making associations of ideas, using written material to find new meanings, information or work procedures in relation to a given topic.</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>-During the reading stage, students mark on the text or in their notebooks:</p> <p>knowledge / information / working procedures confirmed by text - denoted by check</p> <p>knowledge / information / work procedures denied / contradicted by text - denoted by "-"</p> <p>knowledge / information / work procedures they haven't known before - marked with "+"</p> <p>- the individually obtained information is discussed in pairs / groups, then communicated to the teacher. The teacher centralizes them in a table on the blackboard.</p> <p>Uncertain knowledge can be the theme of a</p>

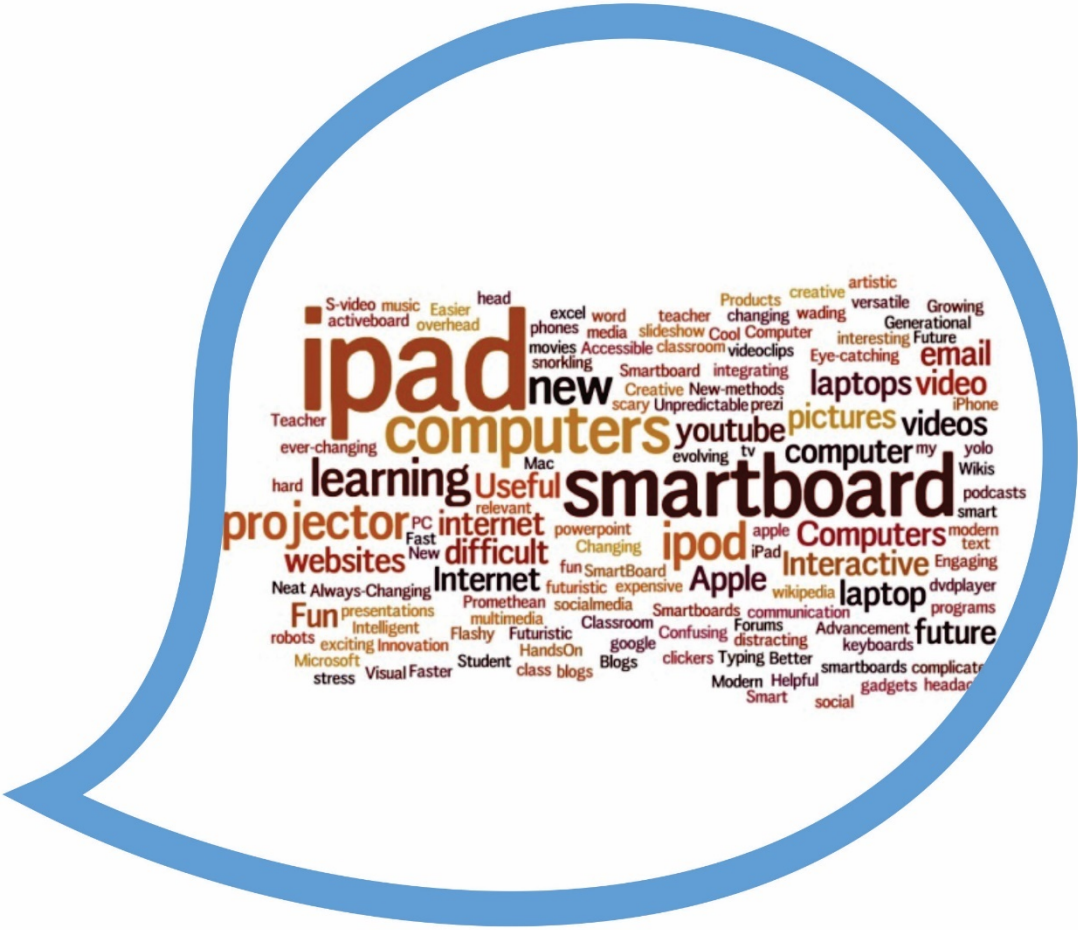
		debate or can be research topic for future lessons.
9. EVIDENCE	Links for videos, photos.	No evidence photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>- students are encouraged to monitor their own understanding</p> <p>- students are personally involved in the process of acquiring knowledge and skills, as they deliberately value and correlate their own schemes of understanding and action in the learning process.</p> <p>Students build their own system of action in new learning situations, system that uses schemes of action that belong to critical thinking</p>
11. ASSESSMENT	Suggested assessment method for the students	/
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	The Racing games feast of mathematics
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	www.math.bas.bg/...MITE2/Grozdev-Chehlarova-paper.pdf www.math.bas.bg/...tii/33-vazrajane-na-praznicite... www.researchgate.net/.../Sava_Grozdev/publication/...
4. LANGUAGE	Language of the source.	Bulgarian, English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	Celebrations of mathematics are useful for all students from the first to the last class of education, they leave a lasting impression in the mind. An important part of the celebration of mathematics are racing games. Participants broadcast three teams with three contestants. First played for team standings, then individual standings. Between stages have educational interesting facts and tasks for the audience.
6. RESOURCES	Required resources for effective application of the method.	<p>Prepared didactic software to celebration of mathematics -type presentation.</p> <p>Supplies for the competition – sheets, pens;</p> <p>Prizes for participants;</p> <p>Invitations for the guests;</p> <p>Logo for each participant and guest;</p> <p>Diplomas (I, II, III place for team and individual ranking);</p> <p>Decoration ;</p>
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<p>Participation in racing games on the celebration of mathematics contribute to:</p> <ul style="list-style-type: none"> • formation of skill orientation in time; • to improve the ability to plan and implement the plan; • for reflection and evaluation at your own opportunities, achievements and personality

		<p>changes as a result of training.</p> <ul style="list-style-type: none"> • improve is the ability to work in a team; • strong emotional impact and form a love to math;
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>Preparation for the celebration:</p> <ul style="list-style-type: none"> • Selection of tasks for the contestants and the audience • Preparation of software product for the celebration; • Preparation of scenarios for the celebration • Development of a logo for each participant and guest • Purchase Awards, making diplomas, invitations to guests • Preparation of consumable for competition • Decorate the room <p>Conduct of the celebration: There are two presenters on the celebration. Acquaint participants and guests with the regulation of the competition . The competition is in three rounds. In the first round of all participants are broadcast three teams of three contestants. The second round is the team standings, and the third - for individual standings. In each round are solved three problems for time. Between each two rounds have interesting facts for the audience and tasks for the audience - so filled time in which contestants solve problems and the celebration has a learning function for the audience. After each round explains the decision of tasks. Commission examines the decisions and broadcast winners.</p>
9. EVIDENCE	<p>Links for videos, photos.</p>	<p>https://drive.google.com/open?id=0B4ls-AtzeWJ9NTZJWFI0TERHUG8</p> <p>https://drive.google.com/open?id=0B4ls-AtzeWJ9STdnZzVVdmRHTGc</p> <p>https://drive.google.com/open?id=0B4ls-AtzeWJ9ZIE1eIVKSjZCY2M</p>
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the 	<p>The competition is very emotional. Participants are always satisfied after its completion, also the audience and guests, since they were not just passive spectators but and participants. For contestants competition also has an educational</p>

	users/target group's opinion of the activity?	<p>and educative function.</p> <p>The limitation of time to solve problems is essential. This limitation requires and accordingly educate concentration in learning the task, in solving it, replying or refusal of it. Assist in the formation of the ability to make a decision. Educates responsibility - no time for continuous verification of the correctness of the result reached. Time constraints contribute to the understanding of the need for knowledge of rational methods of work of more methods to solve problems, more knowledge. In some cases, intuition is crucial to reach an answer - and it is based on associations, analogies of preliminary accumulation of knowledge, skills, tactics and behavior.</p>
11. ASSESSMENT	Suggested assessment method for the students	/
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

PART 7: VISUALIZATION AND ICT



MATH Debate

VISUALIZATION AND ICT

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Where you can, use computers to do the drudge work
2. COUNTRY	In which country does the good practice take place?	U.S.
3. LINK	Please give a web link for further information about the good practice.	http://www.intmath.com/blog/how-to-make-math-class-interesting
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	For the vast majority of your students (who will not eventually become mathematicians), it's more important they understand the concepts and which process to use when confronted with different real problems. They then should learn how to use computer algebra systems (or graphics calculators) to solve such problems.
6. RESOURCES	Required resources for effective application of the method.	http://www.intmath.com/blog/mathematics/free-math-software-downloads-849
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<p>Students skilled to use math software's;</p> <p>Learning becomes interesting;</p> <p>The students easily solve problems.</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	To improve this practice math teaching method we need computers and math software. It help students to solve problems easier, for example if they need to graph a line they can easy make it with those software, just by giving necessary coordinates.
9. EVIDENCE	Links for videos, photos.	/

10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<p>The expected results from this practice are to enable students to use the computer to solve mathematical problems with the help of mathematical software, and to visualize them. Also facilitating and encouraging math learning.</p> <p>Students have very good thoughts about this practice because they consider it to be very interesting to solve mathematical problems with the help of computers, while at the same time they also develop informatics skills.</p>
11. ASSESSMENT	Suggested assessment method for the students	/
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	The cube method
2. COUNTRY	In which country does the good practice take place?	Romania
3. LINK	Please give a web link for further information about the good practice.	http://webserv.lgrcat.ro/ssmrb/evenimente/Sesiu_ne_09_11_2013/15.pdf
4. LANGUAGE	Language of the source.	Romanian
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	<ul style="list-style-type: none"> - Creation of a cube whose sides are the words: describe, compare, analyze, associate, argue - Announcing the theme - Dividing the class into 6 homogeneous groups. examining each topic from the perspective of the requirement from one side of the cube
6. RESOURCES	Required resources for effective application of the method.	<ul style="list-style-type: none"> - Flip-chart sheets. markers, tape, handouts, cube
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<ul style="list-style-type: none"> - Each of the 8 groups receives one of the above tasks about faces, edges, vertices - Describe shapes, sizes, elements - Compare what is similar, what is different - Analyze - Associate - what makes you think of - Argue - list a number of reasons that support your assertion - Geometric body - cube, flip chart, marker
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	<ul style="list-style-type: none"> - The cube method is used if you wish to analyze a situation from multiple perspectives. it allows students to develop skills necessary for complex approaches - The method can be applied using only some sides of the cube
9. EVIDENCE	Links for videos, photos.	http://www.suntparinte.ro/metoda-cubului#prettyPhoto/0/ http://www.tvladimirescutgv.ro/LECTII/Lectie%20descrierea%20clasa%20omogena/grupa_ii.html

10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> - Each student brings his contribution on a topic previously chosen - Each team draws up the final answer - The final form is displayed on the board or on the walls of the class and is analysed by other teams - Trains students in a continuous and collaborative participation - Develops teamwork attitude of tolerance towards others
11. ASSESSMENT	Suggested assessment method for the students	/
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://www.google.ro/search?q=proiect+de+lectie+matematica+metoda+cubului&ei=4k3JWfLhD8OE6QTHlpD4Aw&start=20&sa=N&biw=1366&bih=676

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	'Brainteasers season'
2. COUNTRY	In which country does the good practice take place?	Macedonia
3. LINK	Please give a web link for further information about the good practice.	http://www.learn-with-math-games.com/math-brain-teasers.html
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	The aim of this practice is to develop the critical thinking of students. For that purpose, a set of brainteasers is introduced.
6. RESOURCES	Required resources for effective application of the method.	Projector, computer
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Developing new ways of thinking • Introducing a diversity of opinions and criticizing • Critical attitude toward the problem setting
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	The teacher opens the class with some of the classical mathematical logic problems. Then introduces a web-page with brainteasers and let students decide which one of them to do next. At the end of the class each student receives a different set of problems (in a previously seen setting) that they should try and answer by themselves.
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos to the actual students work.
10. RESULTS	Max 75-100 words. <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	After this practice students are more focused on the details after reading a word problem. They tend to notice the 'weak spots' in logic statements better than previously. Both students that do math with ease and not are excited about solving problems that do not involve the standard curriculum based problems. The students are refreshed from the standard way of learning mathematics. Teachers could clearly see that they are excited and anticipating for the next problem.

11. ASSESSMENT	Suggested assessment method for the students	Assessment methods for this practice should not be strict and should be more oriented toward student ability to verbalize their opinion about the solution of a certain problem.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://www.coolmath4kids.com/brain-teasers

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Solving mathematical problems using concrete materials
2. COUNTRY	In which country does the good practice take place?	Kosovo
3. LINK	Please give a web link for further information about the good practice.	https://kec-ks.org/wp-content/uploads/2016/06/BEP_HULUMTIMI-N%C3%8B-VEPRIM-2.pdf
4. LANGUAGE	Language of the source.	Albanian
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	The main characteristics of these teaching method is solving math problems using concrete materials and games as: Mathematical dictionary, fractional wall, calculator, paper game, dominoes with fractions, memory cards etc.
6. RESOURCES	Required resources for effective application of the method.	Concrete materials – paper, calculator, Lego cubes, ..
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	Students are excited during the class, they learn through the game, and this practice also makes it possible to change the convictions of students who Mathematics felt very difficult to learn.
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	This practice involves games and concrete materials for math solving problems. Where the teacher chooses the proper game or concrete material to explain to students the new lecture, for example during fractional learning they can

		play the game dominoes with fractions.
9. EVIDENCE	Links for videos, photos.	No evidence photos
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>This practice has proved to be positive because after its application the students have been tested for teach units that have been developed with this practice and they have shown good results.</p> <p>Students have also been questioned about this practice and they have been very pleased because math's learning has been facilitated and they have gained good thoughts about it.</p>
11. ASSESSMENT	Suggested assessment method for the students	test
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	'Part of a whole'- introducing fractions in early age
2. COUNTRY	In which country does the good practice take place?	Macedonia
3. LINK	Please give a web link for further information about the good practice.	http://www.stepbystep.org.mk/WEBprostor/toolbox/Matematika_niz_igra.pdf
4. LANGUAGE	Language of the source.	Macedonian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	Using Lego-cubes in in different colours, students represent fractions as part of a whole. For example, the fraction 3/5, can be represented as 3green+2red=5 bricks. In other words, 3 out of 5 bricks are green.
6. RESOURCES	Required resources for effective application of the	Lego-cubes.

	method.	
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Visualisation of fractions • Putting context into numbers • Visually interpret the concept: part of a whole
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	Each student receives a set of Lego-cubes in different colors. The teacher writes a fraction on a paper and shows it to everybody. The students are required to represent the fraction with the Lego-cubes as part of a whole. If somebody makes a different fraction, the students are asked to read the fraction and then represent it. Then it can go the other way around, The teacher showing a ratio using Legos, and the student verbalizing the given fraction. Word problems, as representing $\frac{2}{5}$ of a pizza can also be used. The teacher can go further by asking how much is there until 1.
9. EVIDENCE	Links for videos, photos.	The source does not contain photos or videos to the actual students work.
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	The students enjoy building with Legos and learning fractions in the same time. This is a very visual way of learning, where the students do not even feel that they are engaged in a learning activity.
11. ASSESSMENT	Suggested assessment method for the students	If a student manages to represent a certain fraction he/she is awarded 1 point.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://drive.google.com/open?id=0B97-RYVZgbqDbnNkdXYyUklvckk https://drive.google.com/open?id=0B97-RYVZgbqDNXR1dIN6aTlxa1k

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Visuals and graphics
2. COUNTRY	In which country does the good practice take place?	USA
3. LINK	Please give a web link for further information about the good practice.	http://powerupwhatworks.org/strategy-guide/visual-representations http://powerupwhatworks.org/strategy-guide/visual-representations-teach-tech
4. LANGUAGE	Language of the source.	English
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>Textbooks often include various visuals and graphics for students to learn from. They are crucial elements to accompany text and help get the concepts across to students. However, these graphics appeared to be much more effective when paired with specific practice or guidance. This guidance could be coming from the teacher or from another classroom tool.</p> <p>Teachers are starting to implement computerized learning into the classroom for a more personalized learning approach. In fact, more than four in 10 teachers report the use of e-readers and tablet computers in their classrooms to complete assignments and assist in learning.</p>
6. RESOURCES	Required resources for effective application of the method.	Tablets, computers
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics, which describe the method as a GOOD practice.	All students can benefit from using visual representations, although struggling students may require extra support and practice. Visual representations are a powerful way for students to access abstract math ideas. Drawing a situation, graphing lists of data, or placing numbers on a number line all help to make abstract concepts more concrete, whether done online or offline. Developing this strategy early will give students tools and ways of thinking that they can use as they advance in their learning of more abstract concepts.
8. HOW DOES IT WORK?	Max 100 words.	

	Which activities/actions does the practice involve?	/
9. EVIDENCE	Links for videos, photos.	https://www.youtube.com/watch?v=V-9E_6ZWISk https://www.youtube.com/watch?v=qlqkJH3iSQo https://www.youtube.com/watch?v=C6aQiMjJ7RY
10. RESULTS	Max 75-100 words. <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	With virtual math programs, children can not only see these graphics, but they can revisit concepts that were especially difficult. They are able to learn at their own pace and won't feel rushed to move onto a concept they are not yet ready to tackle.
11. ASSESSMENT	Suggested assessment method for the students	Electronic test
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Coordinate Geometry Method in Solving Problems
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	http://math.bas.bg/
4. LANGUAGE	Language of the source.	Bulgarian
5. SUMMARY (DESCRIPTION OF THE METHOD)	Max 50 words. Please summarise the main characteristics of the teaching practice.	The dynamics of present times challenges the Bulgarian teachers to change their teaching style and methodology. Contemporary students are bored with the monotony of the traditional lesson. They look forward to an interesting approach that will attract and rivet their attention. We share our experiences in practice for implementing the coordinate system in geometric tasks - producing various shapes (of animals) using a coordinate system and find their areas, dividing them into well-known shapes.
6. RESOURCES	Required resources for effective application of the method.	<ul style="list-style-type: none"> • Worksheets with square grid and notebooks. • Drawing and measuring tools. • Painting supplies.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Rationalizing of what has been learned in math through practical application. • Using of imagination and logical thinking. • Acquiring of measuring skills. • Applying the acquired knowledge and skills to detect the properties of figures and certain regularities.
8. HOW DOES IT WORK?	Max 100 words. Which activities/actions does the practice involve?	<p>Preparatory part - A topic is being formulated.</p> <ul style="list-style-type: none"> • Tasks to be solved are placed individually as each student is given a task from the coordinate system for displaying a sequence of points set by its coordinates. • Requirements related to the given

		<p>tasks have been introduced.</p> <ul style="list-style-type: none"> Students are being consulted at different stages of their work. An individual assessment of the obtained results is being given to the students in relation to assigned tasks and requirements.
9. EVIDENCE	Links for videos, photos.	drive.google.com/open?id=0B4ls-AtzeWJ9amVREh6RWdmYzA drive.google.com/open?id=0B4ls-AtzeWJ9RndhUVY5a25fVlk drive.google.com/open?id=0B4ls-AtzeWJ9YndPVVEwNFJuUWs drive.google.com/open?id=0B4ls-AtzeWJ9NE9vWWxLM0tZakU drive.google.com/open?id=0B4ls-AtzeWJ9SHBTT3dJUkxBdEE
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> Research skills are being formed and developed. Creative abilities are being promoted. Spatial thinking is also being developed. Shier students are encouraged to participate in individual tasks. Cooperation and competitive behavior are being stimulated. The irksome learning process converts into diverting and interactive experience. Students' attention is being riveted. They are given an opportunity to participate themselves in the process of learning. Pupils are enabled to use their own knowledge and practical skills.
11. ASSESSMENT	suggested assessment method for the students	<ul style="list-style-type: none"> An individual assessment related to the tasks assigned. Creative and aesthetic workmanship.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	-

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Experimental method in mathematics
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	http://www.dipku-sz.net/izdanie/182/eksperimentt-po-matematika-virtualen-i-realen
4. LANGUAGE	Language of the source.	Bulgarian language
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	Contemporary Bulgarian students get bored of the monotony of the traditional lesson in math class. They expect something interesting to revit their attention. Experiment in mathematics is virtual or real. Caring out real experiments in math class enable students not only to receive knowledge in the form of formulas, theorems and concepts, but also to be able to find out connections between different fields of knowledge. They clearly convince themselves in their authenticity.
6. RESOURCES	Required resources for effective application of the method.	Patterns of geometric shapes and bodies.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> Provides opportunity for students to visualize the material. Connections between formulas and concepts are being established in an experimental way; theorems are also being evinced. Method offers a great variety. Problems associated with boredom by listening to the lesson are being saved to the teacher. Students are being motivated to acquire knowledge. It is given meaning to what has been learned.

<p>8. HOW DOES IT WORK?</p>	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>6th grade - When displaying the formulas for the volume of a pyramid and cone.</p> <p>Students have prisms and pyramids patterns, cylinders and cones with equal areas of bases and equal heights. By pouring water from a pyramid into a prism and from a cone into cylinder students establish in an experimental way the following - the volume of the pyramid or cone is $\frac{1}{3}$ of the volume of the prism or cylinder. They convince themselves of equivalence of terms 'volume' and 'capacity'.</p> <p>8th grade - When introducing the concept 'centroid' in a triangle.</p> <p>Students ascertain with great interest that the centroid not only divides a median in a certain respect, but it is also a center of gravity of the triangle. Working in pairs they have produced in advanced different triangles, construct a centroid and experimentally find out that if you break through the triangle in centroid and tie a string through the hole it remains in balance.</p> <p>Proving the theorem about a circle inscribed in a rectangle</p> <p>By means of sticks students construct a quadrangle around pre-made paper circle and express their hypothesis about the relations between the sides or angles. Once they establish the relation between the sides, they stain the related sides using a marker.</p>
<p>9. EVIDENCE</p>	<p>Links for videos, photos.</p>	<p>https://drive.google.com/open?id=0B4ls-AtzeWJ9TDBaeWtjR1o0Z1E</p>
<p>10. RESULTS</p>	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> • Students come out of 'dryness' of the studied material and play the role of researchers, discoverers of properties. • They establish connections between problem solving and real-life. • They are enabled to form and develop

		<p>research skills;</p> <ul style="list-style-type: none"> • Spatial reasoning is being stimulated; • Students' attention is being riveted. • Students are being given an opportunity for personal involvement; they are empowered to give a sample of their knowledge and practical skills.
11. ASSESSMENT	Suggested assessment method for the students	-
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	-

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	E-lesson in mathematics as a form of training
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	http://conf.uni-ruse.bg/bg/docs/cp15/6.4/6.4-8.pdf
4. LANGUAGE	Language of the source.	Bulgarian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	<p>The use of e-lessons in mathematics education is a method that provoke students' thinking to develop their individual skills, their skills on working effectively in a team environment, to assert creatively and carry out their ideas. Multimedia exposure makes lessons more interesting as it allows the presentation of the material as a system of images, figures, charts and facts in a particular order.</p> <p>The presentation of the educational material presented on a large screen with text and graphics, increases the didactic opportunities of the lesson, reduces training time and maintain students' interest.</p>
6. RESOURCES	Required resources for effective application of the method.	Laptop, multimedia projector, presentation
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<ul style="list-style-type: none"> • Provides an opportunity for visualization of the educational material. • Reducing teaching time. • Maintain the students' interest in learning. • Students are motivated to acquire knowledge. • individual and teamwork skills are being developed.
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions</p>	<ul style="list-style-type: none"> • Solving problems to consolidate students' knowledge on Area of a circle • Knowledge application of geometric

	does the practice involve?	<p>figures surface in tasks of combinatorial character.</p> <ul style="list-style-type: none"> • The class is divided into three groups and each group works on one of the figures. A student of the group presents and gives reasons for the solution. • Update the notion 'statistical table', percentage and constructing a pie chart on tabulated data. • the construction of a pie chart is being displayed visually
9. EVIDENCE	Links for videos, photos.	<p>Presentation</p> <p>https://youtu.be/YI-b_beodZo</p>
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> ▪ Quantitative and qualitative results in relation to the teaching goals. ▪ What is the users/target group's opinion of the activity? 	<ul style="list-style-type: none"> • Students participate during the lesson actively and creatively, they are not in the role of passive observers. • The teacher receives information about the extent of assimilation of pre-existing material (through Tasks 1 and 2) • By solving problems in groups is carried out cognitive interpersonal communication and interaction in different working groups. • A higher quality and effective learning is being achieved. • Students are being motivated to participate more actively in the learning process. • Students like this type of presentation of educational content and work with willingness and interest. • The passive learning process converts into dynamic and interactive experience. • A new learning environment is being established; student's self-activity is being stimulated and a new attitude towards mathematics is being formed.
11. ASSESSMENT	Suggested assessment method for the students	A verbal assessment of the group work is being given. Students that have presented and given reasons for the problem solution are evaluated individually.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	https://drive.google.com/open?id=0B4ls-AtzeWJ9N3BfdVJMY2RkVFE

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Modeling
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	http://www.iteach.ru ; http://www.intuit.ru/departament/education/inteltech/0/ http://pedagogicnews.uniruse.bg/%D0%BC%D0%BE%D0%B4%D0%B5%D0%BB-%D0%BD%D0%B0-%D0%BF%D1%80%D0%BE%D0%B5%D0%BA%D1%82%D0%BD%D0%BE-%D0%B1%D0%B0%D0%B7%D0%B8%D1%80%D0%B0%D0%BD%D0%BE-%D0%BE%D0%B1%D1%83%D1%87%D0%B5%D0%BD%D0%B8%D0%B5-%D0%BF/
4. LANGUAGE	Language of the source.	Bulgarian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	The model is a simplified representation or duplication of real things. The models are: physical, theoretical logic, simulation, mathematical. This practice describes the mathematical - physical model. Knowledge through action. Making of various models / templates / geometric shapes and bodies with a view to their knowledge, according to the elements and properties, measuring basic characteristics for the purpose of calculating the surfaces, area and volume. This includes precision and accuracy of workmanship and aesthetics when choosing material and shaping the final form.
6. RESOURCES	Required resources for effective application of the method.	Colorful cardboard drawing tools, glue, wooden skewers, plasticine.
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	The models enable students to create models of geometric shapes and bodies using their main dimensions and characteristics with a view to their better knowledge and learning. A visual representation of the object, which contributes

		to its recognition and determination. Students use their creativity and develop their aesthetic skills in craftsmanship.
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>1 / Choosing a theme for the application of the method / Geometric shapes: triangle, trapezium, parallelogram - 5th grade. Ribbed and oval shaped bodies - 6th grade ./</p> <p>2 / Task analysis.</p> <p>3 / Building a net of elected bodies.</p> <p>4 / Making of model / templates /</p> <p>5.1 / If the model is a geometric shape measuring basic characteristics for the purpose of calculating the circumference and surface.</p> <p>5.2 / If the model is geometrically form identifies key characteristics for calculating area and volume.</p>
9. EVIDENCE	<p>Links for videos, photos.</p>	<p>https://drive.google.com/open?id=0B4ls-AtzeWJ9ZmdSV2N6VnRnSIU</p> <p>https://drive.google.com/open?id=0B4ls-AtzeWJ9UEo5SU1aVEs2bIU</p>
10. RESULTS	<p>Max 75-100 words.</p> <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	<p>Development of models / templates / develop creative attitude in mathematics. Serve to develop a number of important qualities of logical and creative thinking of students as suggesting such a method in which students prepare to self-discovery and exploration of objects.</p>
11. ASSESSMENT	<p>Suggested assessment method for the students</p>	<p>Individual evaluation:</p> <ul style="list-style-type: none"> - Creative and aesthetic craftsmanship. - True and precise execution. - True cope with the measuring and calculation process.
12. UPLOAD A FILE	<p>Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.</p>	<p>-</p>

FIELD	CONTENT	PLEASE FILL THE CELLS ACCORDING TO THE EXPLANATION IN THE COLUMN CONTENT
1. TITLE	What is the name that best describes the good practice?	Mathematics - a tool for modern thinking /"Creative" classroom/
2. COUNTRY	In which country does the good practice take place?	Bulgaria
3. LINK	Please give a web link for further information about the good practice.	http://www.dipcu-sz.net/izdanie/183 www.j2e.com/toni-66/lesson/4th+grade/10broinasistema http://antoineta.wordpress.com/2015/10/04/
4. LANGUAGE	Language of the source.	Bulgarian
5. SUMMARY (DESCRIPTION OF THE METHOD)	<p>Max 50 words.</p> <p>Please summarise the main characteristics of the teaching practice.</p>	To be creative classroom principal place in it must have creativity. It is a system of creativity, combination of mental and personality that lead to the formation of new ideas for solving the theoretical and practical tasks. Modern younger students demonstrate through their behavior that they need training oriented towards dialogue and cooperation, aiming to experience active learning. Teachers should look for creative approaches, productivity, flexibility, originality, innovation, creativity and stimulate new ideas.
6. RESOURCES	Required resources for effective application of the method.	white and colored paper, pencils, scissors, drawing tools, color and plastic clips
7. WHY IT IS A GOOD PRACTICE?	Give at least three characteristics which describe the method as a GOOD practice.	<p>The creative classroom allows students to freely imagine and create new things.</p> <p>-to fantasize and combine</p> <p>-to form and generate original ideas to modify and use in the classroom in an original way.</p>
8. HOW DOES IT WORK?	<p>Max 100 words.</p> <p>Which activities/actions does the practice involve?</p>	<p>1.Select a theme for the application of the method (Fun activities for studying natural numbers)</p> <p>2. Creation of mathematical abacus(the purpose is to illustrate the decimal positioning system)</p>

		3. Determination of training actions 4. Determining how they connect
9. EVIDENCE	Links for videos, photos.	No evidence photos
10. RESULTS	Max 75-100 words. <ul style="list-style-type: none"> Quantitative and qualitative results in relation to the teaching goals. What is the users/target group's opinion of the activity? 	-Training in creative classroom develops creative thinking, guesswork, intuition. Enhances creative searching. -Form and develop research skills. -Develop spatial reasoning. -Encourages timid at work. -Stimulate competitive behavior. -It allows training to be interesting.
11. ASSESSMENT	Suggested assessment method for the students	Individual assessment: -creative and aesthetic product. - for participation, for the correct answer.
12. UPLOAD A FILE	Please send related electronic documents (lesson plan, evaluation etc.) so that they can be uploaded on the e-platform.	No additional files

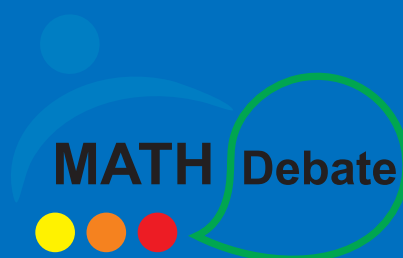
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Part of review:

... "Math teachers will have the opportunity to perceive the challenges that math teaching process is faced with, in order to prepare students for a "knowledge and skills - based economy" as a fundamental EU priority after 2020" ... - S.Mirascieva

... "This is nice synthesis of positive practices collected from all around the world, so learning mathematics may become interesting and fun, but striving for quality and excellence at the same time"... A.Rushiti



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